

Trade in the Balance: Reconciling Trade and Climate Policy

Report of the Working Group on Trade, Investment, and Climate Policy

NOVEMBER 2016



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The **Global Economic Governance Initiative (GEGI)**, founded in 2008, is a research program focused on advancing policy-relevant knowledge about governance for financial stability, human development, and the environment. GEGI is a joint program of the Frederick S. Pardee School of Global Studies, the Frederick S. Pardee Center for the Study of the Longer-Range Future, and the Center for Finance, Law & Policy.

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PREFACE AND ACKNOWLEDGEMENTS

In 2016 Boston University's Global Economic Governance Initiative teamed with the Georgetown University Law Center's Harrison Institute for Public Law to convene an interdisciplinary working group to examine the extent to which the World Trade Organization (WTO), free trade agreements (FTAs) and international investment agreements (IIAs) are compatible with climate change goals. The group found that the trading regime in general, and United States-led FTAs and IIAs in particular, are in tension with the policies necessary for aggressive climate action.

This report outlines the general tensions between the trade and investment regime and climate policy, and outlines a framework toward making trade and investment rules more climate friendly. Members of the working group have contributed short pieces addressing a range of issues related to the intersection of trade and climate policy. The first two are by natural scientists. Anthony Janetos discusses the need to address the effects of international trade on efforts to limit the increase in global annual temperature to no more than 2°C over preindustrial levels. James J. Corbett examines the failure of the Trans-Pacific Partnership (TPP) and the Transatlantic Trade and Investment Partnership (TTIP) to adequately address the environmental implications of shipping and maritime transport. The next two pieces are by economists who examine economic aspects of the trade-climate linkage. Irene Monasterolo and Marco Raberto discuss the potential impacts of including fossil fuel subsidies reduction under the TTIP. Frank Ackerman explores the economic costs of efforts to promote convergence of regulatory standards between the United States and the European Union under the TTIP. The following two contributions are by legal scholars. Brooke Güven and Lise Johnson explore the potential for international investment treaties to redirect investment flows to support climate change mitigation and adaptation, particularly with regard to China and India. Matt Porterfield provides an overview of the ways in which both existing and proposed trade and investment agreements could have either "climate positive" or "climate negative" effects on mitigation policies. The final article is by Tao Hu, a former WTO trade and environment expert advisor for China and currently at the World Wildlife Fund, arguing that the definition of environmental goods and services' under the WTO negotiations needs to be expanded to better incorporate climate change.

The Global Economic Governance Initiative (GEGI) would like to thank and acknowledge numerous people and organizations for helping to make this working group possible. GEGI is jointly administered by three units at Boston University, all of whom have assisted in some way in this publication: the Pardee School of Global Studies, the Pardee Center for the Longer Range Future, and the Center for Finance, Law, and Policy where GEGI is housed. GEGI also thanks the Harrison Institute for Public Law at Georgetown Law School for agreeing to co-host the working group in its first stage. We also thank Lise Johnson of Columbia Law School who left her maternity leave to participate in this project, and Ben Beachy and Ilana Solomon for useful comments on drafts of this report.

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ACRONYMS AND ABBREVIATIONS

APEC:	Asia-Pacific Economic Cooperation
BIT:	Bilateral Investment Treaty
BRICS:	Brazil, Russia, India, China, and South Africa
BTA:	Border Tax Adjustment
CBD:	Convention on Biodiversity
CEPR:	Centre for Economic Policy Research
CO₂:	Carbon Dioxide
CTE:	WTO's Committee on Trade and Environment
CTS:	WTO's Council for Trade in Services
CWA:	Clean Water Act
DDA:	Doha Development Agenda
EC:	European Commission
EGA:	Environmental Goods Agreement
EGS:	Environmental Goods and Services
EPA:	U.S. Environmental Protection Agency
EU:	European Union
EU ETS:	European Union Emissions Trading System
FET:	Fair and Equitable Treatment
FQD:	Fuel Quality Directive
FTA:	Free Trade Agreement
G20:	International forum of 20 major economies
GATT:	General Agreement on Tariffs and Trade
GATS:	General Agreement on Trade in Services
GtC:	Gigatons of Carbon
GtCO₂:	Gigatons of Carbon Dioxide
GDP:	Gross Domestic Product
GHG:	Greenhouse Gas
GTAP:	Global Trade Analysis Project
ICS:	Investment Court System
IIA:	International Investment Agreement
IMF:	International Monetary Fund
IMO:	International Maritime Organization

INDC:	Intended Nationally Determined Contribution
ISDS:	Investor-State Dispute Settlement
LNG:	Liquefied Natural Gas
MARPOL:	International Convention for the Prevention of Pollution from Ships
MDB:	Multilateral Development Bank
MEA:	Multilateral Environmental Agreement
MNC:	Multinational Corporation
NAFTA:	North American Free Trade Agreement
NGO:	Non-Governmental Organization
NTB:	Non-tariff Barrier
OECD:	Organization for Economic Cooperation and Development
R&D:	Research and Development
REACH:	Registration, Evaluation, Authorization, and Restriction of Chemicals
SCM:	Subsidies and Countervailing Measure
SDGs:	United Nations' Sustainable Development Goals
TEPAC:	Trade and Environment Policy Advisory Committee
TiSA:	Trade in Services Agreement
TPP:	Trans-Pacific Partnership
TRIM:	Trade-Related Investment Measure
TTIP:	Transatlantic Trade and Investment Partnership
UN:	United Nations
UN CPC:	UN Central Product Classification
UNEP:	United Nations Environment Programme
UNFCCC:	United Nations Framework Convention on Climate Change
UN-GPM:	United Nations' Global Policy Model
US:	United States
USCG:	United States Coast Guard
USITC:	United States International Trade Commission
VOC:	Volatile Organic Compound
WHO:	World Health Organization
WTO:	World Trade Organization

TRADE, INVESTMENT, AND CLIMATE POLICY: THE NEED FOR COHERENCE

Kevin P. Gallagher

The world is at a turning point in global economic policy-making. With the Sustainable Development Goals (SDGs) and the Paris Agreement on Climate Change there is convergence on a new set of goals for the future of the earth's economy, people, and ecosystems. In each of these arenas world leaders overcame traditional North-South divides to agree on an agenda for the world economy that is low-carbon and socially inclusive.

The newly formed Working Group on Trade, Investment, and Climate Policy finds that trade and investment treaties can be instruments to advance the global climate and development agenda, but that the prevailing model of trade and investment treaties is largely incompatible with the world's broader climate goals. The model rules for trade and investment treaties need to be redesigned with an overriding principle to reward climate-friendly modes of economic activity, curb activity that worsens climate change, and provide the proper policy space so that nation-states can adequately address the climate challenge. At the very minimum, the trade model should be adjusted in such a way that treaties do not result in net increases of greenhouse gas emissions.

“ At the very minimum, the trade model should be adjusted in such a way that treaties do not result in net increases of greenhouse gas emissions.”

The New Global Agenda

The SDGs recognize the need for a coordinated international policy response to address climate change, noting that “climate change is a global challenge that does not respect national borders. Emissions anywhere affect people everywhere. It is an issue that requires solutions that need to be coordinated at the international level...” (United Nations 2015). Similarly, Article 2 of the Paris Agreement on climate change states that the world aims to “strengthen the global response to the threat of climate change, in the context of sustainable development and efforts to eradicate poverty, including by . . . [m]aking financial flows consistent with a pathway towards low greenhouse gas emissions and climate resilient development.”

It is paramount that these goals become incorporated into the mission and actions of global economic governance institutions. To this end, steps in the right direction have already been undertaken at the Multilateral Development Banks (MDBs) and at the global macroeconomic coordinating bodies such as the International Monetary Fund (IMF) and the G20. In April 2016 the MDBs demonstrated their commitment to the SDGs and the Paris goals by pledging to shift at least one-third of their portfolios toward financing for climate mitigation and adaptation. The MDBs have also adopted policies to sharply curb financing for coal fired power plants.

The IMF's Christine Lagarde has said that climate change “is by far the greatest economic challenge of the 21st century” (Lagarde 2013). The IMF has been at the forefront of tracking fossil fuel subsidies, calling for their phase out, and designing fiscal measures to curb the use of fossil fuels (IMF 2016). The G20 has pledged to put climate change at the top of its agenda, and has issued and

re-affirmed resolutions to phase out fossil fuel subsidies, although many G20 nations have fallen short of meeting the commitments (Krisch and Roberts, 2014). Developing nations have created their own institutions that put climate and development at the heart of their mission. China has created its own climate change fund for South-South cooperation on climate policy and boasts the largest green bond market in the world, while the BRICS nations have created a new development bank solely focused on sustainable infrastructure.

The efforts by developing countries, the MDBs, the IMF, and the G20 are steps in the right direction to incorporate climate goals into global economic policies. The international trade regime needs to similarly evolve to ensure compatibility with climate goals. As Laurence Tubiana, France's Special Ambassador to the Paris Climate Conference, has noted, unless there is coherence between trade agreements and climate policy "we will go nowhere" on climate goals (Mitchell 2016).

In 2016, Boston University's Global Economic Governance Initiative teamed with the Georgetown University Law Center's Harrison Institute for Public Law to convene an interdisciplinary working group to examine the extent to which the World Trade Organization (WTO), free trade agreements (FTAs) and international investment agreements (IIAs) are compatible with climate change goals. The group found that the trading regime in general, and United States-led FTAs and IIAs in particular, are in tension with the goal of aggressively reducing greenhouse gas emissions and the policies necessary for achieving this goal. The working group identified two core areas where the current model is incompatible with aggressive climate action:

1. Trade and investment agreements tend to increase greenhouse gas emissions.
2. Trade and investment rules can undermine climate policies and impose limits on government regulatory authority.

The WTO made a promising start toward addressing the implications of trade rules for climate change in 2007 when it collaborated with the United Nations Environmental Programme on a study on trade and climate change which concluded, *inter alia*, that trade liberalization "most likely lead(s) to increased CO₂ emissions." (WTO-UNEP, 2009). Unfortunately, governments have done little to promote consistency between the trade regime and climate policy, and in some instances have actually taken aggressive steps to avoid any consideration of climate in trade negotiations. The United States, for example, eliminated references to climate change from the text of the Trans-Pacific Partnership and does not consider climate change in its environmental reviews of trade agreements (Gleeson, 2014; USTR, 2013).

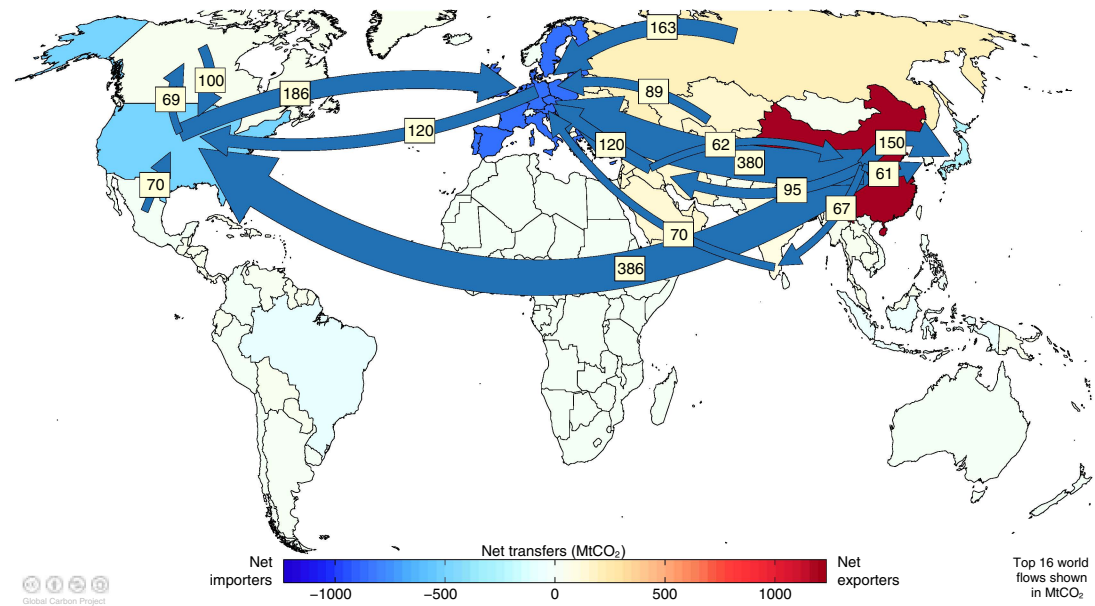
What follows this introduction are elaborations of the two general conclusions of the working group in context, and the outline of an approach to reconcile the gaps between trade, investment, and climate policy.

Trade and Investment Agreements Tend to Increase Greenhouse Gas Emissions

Trade and investment agreements tend to increase emissions of greenhouse gases in the world economy (WTO-UNEP, 2009). Member countries continue to negotiate at the WTO, engage two mega-regional trade deals, the TPP and TTIP, and IIAs with India and China are under discussion and forging ahead. Not including the WTO negotiations, the regional FTAs and key IIAs represent 80 percent of the world economy and cover the major sources of emissions and trade-related emissions flows (Andrew et al., 2013). While the core nations of the world economy are expanding the

prevailing rules for global trade and investment, there has been very little formal assessment of the impact of current trade and investment treaties on climate change. The few studies that have been conducted show that the current deals on the table will increase emissions.

FIGURE 1: World Emissions Embodied in Global Trade



Source: Andrew et al., (2013).

Trade-related emissions account for roughly 26 percent of global emissions (Andrew et al., 2013). Figure 1 exhibits the major routes of trade-related carbon dioxide emissions in the world economy—from their location of generation (exports) to the location of consumption (imports). What is important to note from this figure is that the United States, Japan and Europe are the epicenters of trade-related emissions in terms of imports, and China in terms of exports—the nations engaged in the largest FTAs and IIAs to date. What is more, the TTIP, TPP, and U.S.-China BIT are all a set of negotiations in play that will govern the core pathways of these emissions moving forward.

Trade and investment treaties can have direct and indirect impacts on the environment (Gallagher, 2009). In terms of direct impacts, trade is conducted through transportation; transportation-related emissions occur through maritime shipping, trucking, and aviation. Increased transportation can have negative effects on environmental quality unless the methods by which we transport goods and services are altered.

The now-standard framework for thinking about the indirect impacts of trade on the environment was developed by Grossman and Krueger (1993). In analyzing the North American Free Trade Agreement (NAFTA) these economists identified three mechanisms by which trade and investment liberalization impact the environment: scale, composition, and technique effects. Scale effects occur when liberalization causes an expansion of economic activity. If the nature of that activity is unchanged but the scale is growing, then pollution and resource depletion will increase along with output. Composition effects occur when increased trade leads nations to specialize in the sectors in which they enjoy a comparative advantage. If those sectors where a nation has a comparative advantage are relatively less greenhouse gas (GHG) intensive, then emissions can decrease. However, if those sectors are more GHG intensive, then emissions can increase. For example, the United States International Trade Commission (USITC) report projects greater production in

Malaysia and Viet Nam of certain goods (e.g. chemicals) that are currently produced in the U.S. Manufacturing in Malaysia is about twice as carbon intensive, and manufacturing in Viet Nam is about six times as carbon-intensive, as manufacturing in the U.S., meaning that this shift would result in increased emissions (USITC, 2016).

Technique effects, or changes in resource extraction and production technologies, can potentially lead to a decline in pollution per unit of output for two reasons. First, the liberalization of trade and investment may encourage multi-national corporations (MNCs) to transfer cleaner technologies to developing countries. Of course, technique effects can also go the other way; for example, if increases in natural gas exports occurred through hydraulic fracturing versus through other means. Second, the literature on the “environmental Kuznets curve” suggests that if economic liberalization increases income levels, the newly affluent citizens may demand a cleaner environment. However, thus far the literature has found no environmental Kuznets curve for greenhouse gas emissions, meaning that increases in income are correlated with increases in emissions (Gallagher, 2009).

Both the United States (U.S.) and the European Union (EU) assess the environmental impacts of trade (but not investment) treaties but neither fully extends these established frameworks to examine the impacts of treaties on climate change. The U.S. conducts “Environmental Reviews” of trade treaties but to date U.S. Environmental Reviews do not assess climate change impacts. Indeed, the U.S. government-sponsored Trade and Environment Policy Advisory Committee (TEPAC) noted in 2015 that the TPP does little to address climate change. While initial drafts of the TPP did include some language on climate change, such language was deleted from the final text of the agreement.

The EU has conducted some assessments of the impact of the TTIP on climate change—concluding that the agreement will increase emissions (EC, 2016). According to the EU-sponsored TTIP report, the TTIP could increase emissions due to increases in the scale of economic activity, increased emissions from transportation, and by changing the composition of industries and trading partners by 0.1 to 0.3 percent with a social cost of increased carbon emissions of 58 to 84 billion Euro. The largest increase in emissions will be in China given that the treaty is projected to relocate some production to that country.

The EU study is only a partial one because it does not extensively examine the direct and indirect impacts of the agreement. As the other pieces in this collection point out, the EU assessment does not adequately examine the impact of shipping and transport emissions (Corbett, p. 20); fails to examine the climate implications of the EU objective to guarantee the free export of crude oil and gas; and does not assess the impacts of reducing fossil fuel subsidies under TTIP. In this report, Monasterelo and Raberto (p. 28) find that if TTIP does not address fossil fuel subsidies (and at this writing the language on subsidies does not adequately consider fossil fuels) the TTIP would further increase emissions, have the smallest impact on output and employment, and may adversely impact financial stability in the EU.

Trade and Investment Rules Can Undermine Climate Policies and Impose Limits on Government Regulatory Authority

The potential impacts of trade and investment agreements on the ability to formulate national and international climate change policies are equally as concerning as the economically driven impacts of these agreements on climate change. Legal scholars and governments alike have expressed serious concern that there are many situations where trade and investment rules will make it more difficult for nations to deploy strong climate policy. Moreover, there is concern that the emerging

regime of dispute resolution will shift the balance of power toward climate polluters over nation-states through the prevailing model's use of "investor-state dispute resolution" versus the "state-to-state" dispute resolution system found under the WTO.

The overriding principles governing modern FTAs are "most-favored nation" and "non-discrimination" and "market access". If the United States imports similar or "like products" such as cars from Japan and Malaysia under the TPP, the U.S. cannot impose a higher tariff on Malaysia's imports than it does Japan's—as Japan's would be considered the "most-favored nation" given its lower tariff, every party of the agreement has to adhere to the treatment of the most favored nation. Moreover, the U.S. has to put U.S. carmakers on an even playing field with its trading partners, and cannot treat U.S. car makers in ways that will make U.S. cars more favorable to U.S. consumers than Japanese or Malaysian cars—a non-discrimination standard known as "national treatment". At first glance the logic behind these principles is clear—practicing non-discrimination and not violating national treatment can put domestic and international producers on the same playing field such that it encourages nations to produce in sectors where they have a comparative advantage.

“ ... universally reducing trade barriers in all goods and services regardless of their climate impacts—as in the case of oil and gas exports—only further accentuates current patterns of economic activity that contribute to climate change.”

With respect to climate, there are situations where aggressive climate policy could be in complete alignment with these principles. Treaties could prioritize the reduction of trade barriers in cleaner cars and energy production technologies, cleaner energy services, and the reduction of fossil fuel subsidies. In this area, the concern is that these potential "win-win" scenarios have simply not been analyzed or prioritized.

Worse still, universally reducing trade barriers in all goods and services regardless of their climate impacts—as in the case of oil and gas exports—only further accentuates current patterns of economic activity that contribute to climate change.

There are other policies that are essential parts of the climate change policy-tool kit that are likely to be inconsistent with these principles, yet there is little flexibility to allow for them. One example could be border tax adjustments (BTAs). Under countries' national climate change plans they may choose to put a price on carbon dioxide through taxation or cap-and-trade programs so that goods and services more adequately reflect their true climate costs and benefits. However, such policies could put domestic manufacturers at a disadvantage if that same nation begins to import carbon intensive goods from countries that lack such a policy (and therefore produce at a cheaper price). Economists and lawyers alike have proposed the use of BTAs on such products, but BTAs could violate non-discrimination standards in treaties. Market access provisions under services could also be a concern. The U.S. might commit to providing "market access" for services related to oil and gas. This would enable other countries to challenge the U.S. if states would ban fracking, as that would violate the market access rules to which the U.S. has committed its oil/gas-related services (e.g. by reducing the number or value of operations).

Similarly, rather than increasing the price of climate disruptive economic activity, some governments may choose to decrease the price of more climate-friendly goods and services such as solar and wind power through subsidies, feed-in tariffs, and other measures. Governments may also seek to put in place policies to develop domestic renewable energy industries in order to decrease the price of renewables over the longer term and to increase the social benefits of climate policy. However, cases have been brought against China, India, Canada, European nations, and the United States for doing so because such subsidies and prioritization can be a violation of national treatment principles (ICTSD, 2016). This is especially the case if such measures also require "local content"—that is, domestic producers and workers being explicitly supported by the policy. Local content policies

can help make markets more competitive and increase domestic value-added in the longer run, especially when there are few players in the sector. Additionally, local content policies can correct for market failures by generating positive spillovers and linking domestic producers to local markets (World Bank, 2013; Alfaro and Rodríguez-Clare, 2004). Local content policies can also be politically important, creating coalitions for climate change policy through job creation and production opportunities (Meyer, 2015).

While IIAs also largely enshrine the principles of most-favored nation and non-discrimination, IIAs bring in another host of concerning standards when it comes to climate change. Two standards that are seen as most concerning are “expropriation” and “fair and equitable treatment” (FET). Most critically, investors have argued that new regulations that pose significant cost on the investor or that ban their product altogether as tantamount to expropriation. FET requires governments to compensate investors for measures seen to interfere with the investors’ “legitimate expectations” of a predictable regulatory environment. In both cases, even if the measure in question is the result of a good faith effort to protect the public interest, the host government may be held liable to compensate the foreign investors for damages.

IIAs are very broad agreements that have national treatment, non-discrimination, FET, expropriation, and host of other measures. As Güven and Johnson point out in this report (p. 50), investors could use these standards to challenge policies that: phase out fossil fuel subsidies or put in place carbon taxes; would deny permits to coal, oil, and gas investments on climate change grounds; include local content standards linked to clean energy portfolio development; include stricter emissions standards in new laws or application of existing laws, and beyond.

Investment treaties have been used to challenge policies that would mitigate climate change, such as a claim against Germany’s regulation of a coal-fired power plant (Bernasconi-Osterwalder and Hoffman, 2012). There are several pending challenges under NAFTA that are related to climate change. In *Lone Pine v. Canada*, a U.S. gas company is challenging Quebec’s moratorium on hydraulic fracturing or “fracking” of natural gas. In *TransCanada v. United States*, the Canadian company is seeking USD 15 billion in alleged damages from the United States for United States’ rejection of the proposed Keystone XL pipeline, a project that would have transported significant amounts of petroleum from Canadian tar sands to refineries along the Gulf Coast. While climate policy analysts see the move as U.S. leadership on climate change, TransCanada claims that the measure is violating non-discrimination, FET, and expropriation standards in the NAFTA.

A particular source of concern with regard to IIAs is the “investor-state dispute settlement” (ISDS) process. Such an approach stands in stark contrast to “state-to-state” dispute settlement under the WTO, where nations states govern the settlement of disputes arising from the treaty. Van Harten, Porterfield, and Gallagher (2015) identify four key concerns among policy-makers and scholars, where ISDS is seen to:

- shift key powers to for-profit arbitrators who are not publicly-accountable or judicially independent;
- not satisfy basic standards of judicial independence and fair process;
- grant foreign investors a range of benefits that are not available to domestic investors and citizens; and
- pose significant risks to democratic accountability and regulatory flexibility.

Granting such rights and powers in a climate-constrained world is very concerning because climate policy-making necessitates important policy decisions about past, present, and future costs and benefits to the public and planet at large. Under a “state-to-state” system nation-states have the ability to frame disputes on behalf of the well-being of entire nations and ecosystems—looking for situations where the benefits to the majority outweigh losses to a minority. However, that cost-benefit analysis is tipped on its head under ISDS. With ISDS, private firms and investors may directly file claims against governments that put in place new climate change policies. In other words, those firms that cause climate change have the power to externalize the costs of climate change to the broader public while profiting from awards in private tribunals.

Putting Climate Change First

The trade and investment system can be an instrument for advancing the world’s climate change goals. While the EU, the U.S., and China have made strides in prioritizing climate change in other areas of global economic governance, they have yet to do so in international trade and investment policy. The world’s environment and economy cannot afford this approach. Bold steps are necessary to create coherence between the climate change and trade and investment regimes.

Similar to the approach that is under formulation at the MDBs, the trade and investment regime should **adopt the overriding principle of accelerating trade, investment and technology flows of climate-friendly economic activity while curbing goods, services, and technology flows that accentuate climate change** while preserving the ability of governments to put in place strong policies to address the climate crisis. To this end, governments and civil society should ensure that:

- 1) The potential economic and regulatory-related climate impacts of current and proposed treaties be thoroughly analyzed across and inserted into trade and investment policy-making processes;
- 2) Model rules for trade and investment treaties be redesigned to reward climate friendly activity and curb economic activity that exacerbates climate change;
- 3) The governance of disputes under trade and investment treaties be reformed to ensure that foreign investors do not hold greater rights than nation-states over climate policy-making.

As noted earlier, the United States does not incorporate climate change analyses in its environmental review process. The Europeans are further along, but lack broader analyses of shipping trade and regulatory implications. To date, there has been no comprehensive analysis of the impacts of BITs on climate change. Rigorous assessment is needed and should be used as a guide for negotiators to ensure that trade and investment treaties are compatible with and supportive of climate policy objectives. Governments should pause current negotiations while the model rules are developed so that the negotiations can then be altered to conform with such assessments. Similarly, proper analysis may necessitate the re-negotiation of existing pacts to increase the conformity of trade and climate policy.

The model rules for trade and investment treaties need to be redesigned with an overriding principle to reward climate-friendly modes of economic activity and curb activity that worsens climate change. At the very minimum, the trade model should be adjusted in such a way that treaties do not result in net increases of emissions. To this end, Table 1 presents an illustrative list of principles for a new trade and investment model.

TABLE 1: Illustrative List of Potential Measures to Make Trade and Investment Treaties More Consistent with Climate Goals

OBJECTIVE 1: PRIORITIZE GLOBAL FLOWS OF CLIMATE-FRIENDLY GOODS AND SERVICES. FOR EXAMPLE:

- Reduce tariffs on climate-friendly goods
- Prohibit fossil fuel subsidies
- Accelerate movement of capital for climate friendly investment
- Compulsory licensing for climate-friendly patents and copyrights
- Flexibilities for border adjustment taxes, climate-friendly subsidies, climate-friendly procurement, increasing domestic capabilities, and other climate policies

OBJECTIVE 2: RESTRICT GLOBAL FLOWS OF GOODS AND SERVICES THAT ACCENTUATE CLIMATE CHANGE

- Freeze fossil fuel and other carbon intensive tariffs at bound levels—or increase them
- Restrict carbon intensive services
- Restrict carbon intensive foreign direct investment
- Increase license fees and timelines for carbon intensive patents and copyrights
- Restrict foreign investor rights in carbon intensive activity

This list is merely illustrative, is by no means exhaustive, and would need to be complemented by adjustment and capability enhancement funds for displaced workers, firms, and countries. This illustrative list is intended to spark a broader and more empirical based discussion among scientists, trade and investment experts, policy makers, and civil society to apply this approach to the trade and investment regime.

At this writing, trade and investment measures do not reward climate-friendly economic activity and discourage climate-disrupting economic activity—nor do they provide the adequate policy flexibilities for decisive climate policy. Nations and negotiators must assure that the trade and investment regimes are more coherent with advancing climate goals. As quoted earlier, “climate change is a global challenge that does not respect national borders. Emissions anywhere affect people everywhere. It is an issue that requires solutions that need to be coordinated at the international level” (United Nations, 2015). Trade and investment policies need to be the rule for such coordination, not the exception.

References

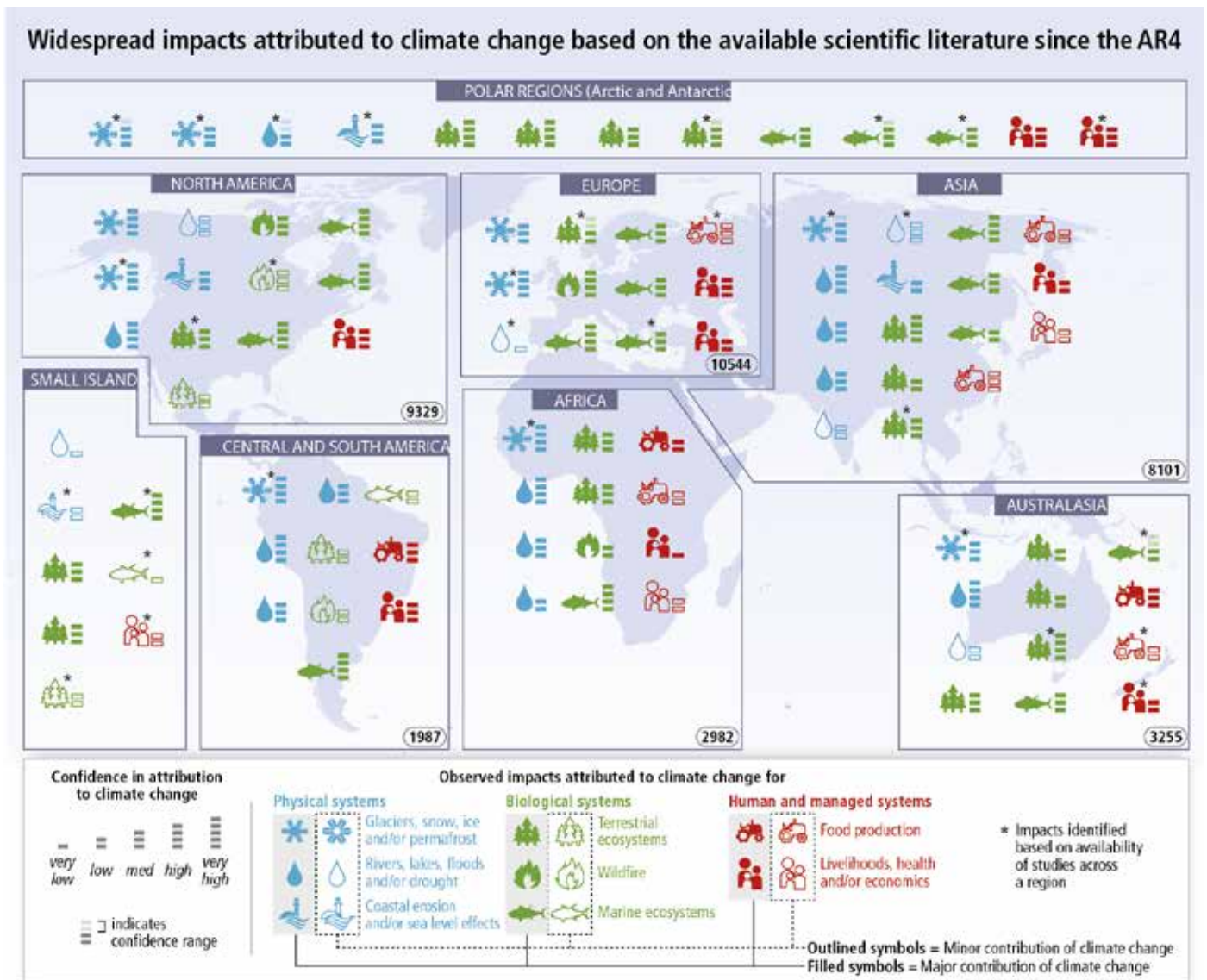
- Alfaro, Laura, and Andrés Rodríguez-Clare (2004). "Multinationals and Links: An Empirical Investigation," *Economia (Journal of LACEA)* 4 (2): 157–63.
- Andrew, Robbie, Steven Davis and Glen P. Peters (2013). "Climate Policy and Dependence on Traded Carbon," *Environmental Research Letters*, 8, 23.
- Bernasconi-Osterwalder, Nathalie and Rhea Tamara Hoffmann (2012). "The German Nuclear Phase-Out Put to the Test in International Investment Arbitration? Background to the New Dispute *Vattenfall v. Germany (II)*." IISD Briefing Note, June 2012, p. 4. International Institute for Sustainable Development. Available at <http://tinyurl.com/German-Nuclear-Phase>
- European Commission (2016). Trade SIA on the Transatlantic Trade and Investment Partnership (TTIP) between the EU and the USA. Draft Interim Technical Report. Brussels: European Commission. Available at <http://tinyurl.com/Trade-SIA>
- Gallagher, Kevin P. (2009). "Economic Globalization and the Environment," *Annual Review of Environment and Resources* 34:279–304.
- Gleeson, Deborah (2014). Comparison of the wikileaks consolidated text with the most recent U.S. proposal to rewrite the language in the areas of Trade and Biodiversity and Trade and Climate change. Available at <http://tinyurl.com/Biodiversity-Climate-Change>
- Grossman, Gene M. and Alan B. Krueger (1993). Environmental impacts of a North American Free Trade Agreement. In *The US-Mexico Free Trade Agreement*, ed. Peter M. Garber, 3:13–56. Cambridge: MIT Press
- Harten, Gus Van Harten, Matthew C. Porterfield and Kevin P. Gallagher (2015). Investment Provisions in Trade and Investment Treaties: The Need for Reform. *GEGI Exchange, No 5*. Boston University, Global Economic Governance Initiative. Available at <http://tinyurl.com/Investor-Disputes>
- International Centre for Trade and Sustainable Development (2016). "India Files WTO Challenge Against US State Programmes for Renewable Energy," *Bridges*, 20 (30). Available at <http://tinyurl.com/WTO-Challenge>
- International Monetary Fund (2016). "Climate, Environment, and the IMF," International Monetary Fund Factsheet. Washington D.C.: IMF. Available at <http://tinyurl.com/IMF-Climate-Facts> (accessed August 14, 2016)
- Krisch, Adam and Timmons Roberts (2014). The Ghosts of Resolutions Past: The G-20 Agreement on Phasing Out Fossil Fuel Subsidies. Washington, D.C.: Brookings, online, November 14. Available at <http://tinyurl.com/Brookings-G20>
- Lagarde, Christine (2013). A New Global Economy for a New Generation, (Remarks prepared for the World Economic Forum, Davos, Switzerland, January 23, 2013) Available at <https://www.imf.org/external/np/speeches/2013/012313.htm>.
- Meyer, Timothy (2015). How Local Discrimination Can Promote Global Public Goods. *95 Boston University Law Review* 1939 (2015). Available at SSRN: <http://ssrn.com/abstract=2674261>
- Mitchell, Rick (2016). TTIP Could Test Compatibility of Trade, Climate Goals, *International Trade Daily*, April 18 (subscription).
- Office of the United States Trade Representative (USTR) (2013). Interim Environmental Review—Trans-Pacific Partnership Agreement (August) Available at <http://tinyurl.com/TPP-Interim-Review>
- United Nations (2015). Sustainable Developments Goals, Goal 13: Take urgent action to combat climate change and its impacts. Available at <http://tinyurl.com/UN-Climate-Action>
- United States International Trade Commission (2016). *Trans-Pacific Partnership Agreement; Likely Impact on the US Economy and Specific Industry-Sectors*, USITC, Publication No. 4607.
- World Bank (2013). *Local Content Policies in the Oil and Gas Sector*, Washington, D.C.: World Bank.
- WTO-UNEP (2009). Trade and Climate Change, WTO-UNEP Report, p. xii. Geneva: World Trade Organization. Available at <http://tinyurl.com/WTO-UNEP-2009>

WHY TRADE MATTERS TO A CLIMATE AGREEMENT

Anthony C. Janetos

For more than a decade, the scientific community has explored the implications of a world in which the global average annual temperature has risen 2 degrees Celsius above its preindustrial value. The consensus is perhaps best captured in this graphic from the last Intergovernmental Panel on Climate Change (IPCC) report (IPCC, 2014).

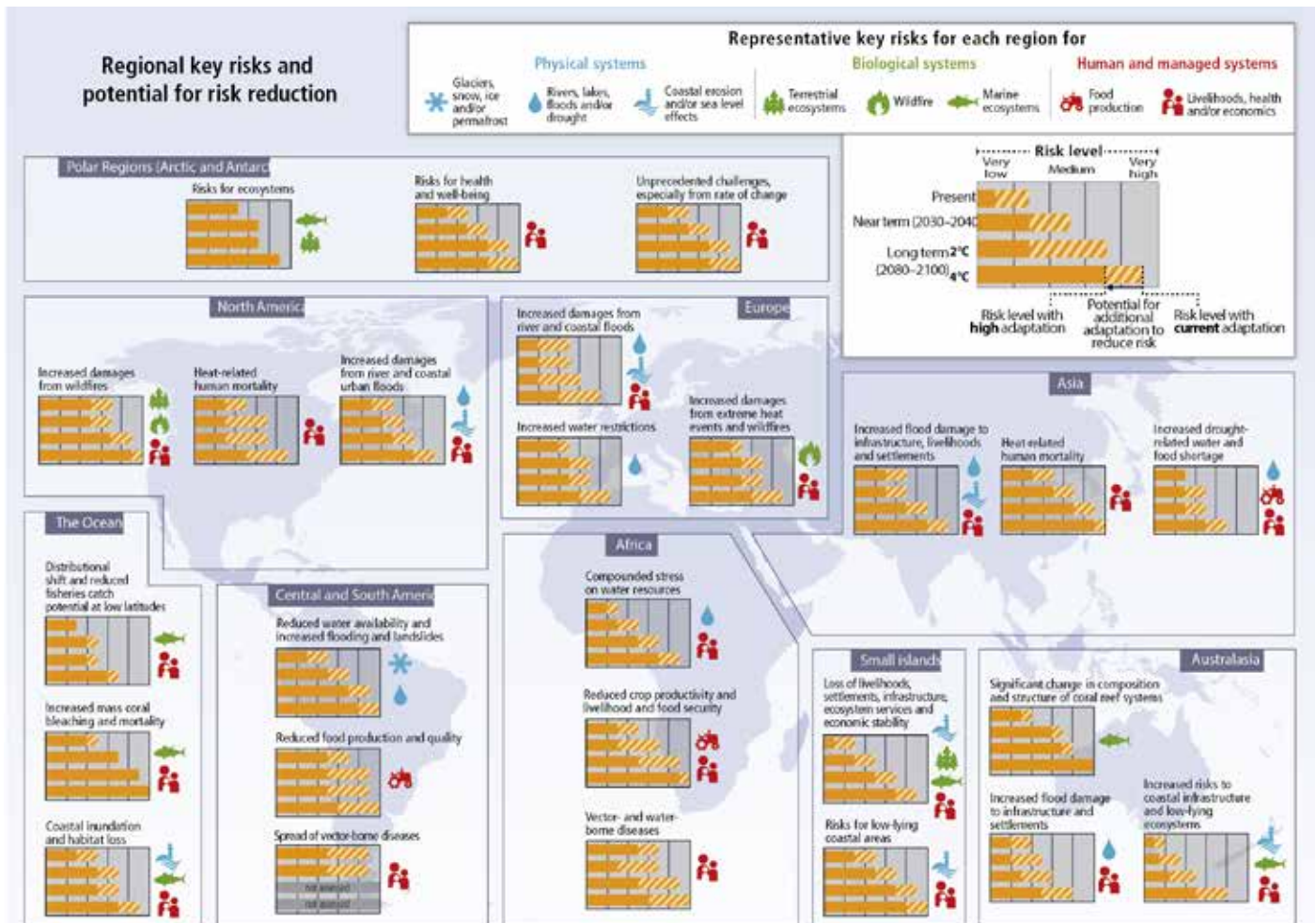
FIGURE 1: Climate Change Impacts



Source: Figure SPM.4 from Climate Change 2014: Synthesis Report. Contribution of Working Groups I, II and III to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change [Core Writing Team, Pachauri, R.K. and Meyer, L. (eds.)]. IPCC, Geneva, Switzerland.

In such a world, there are substantially higher risks of adverse ecological, agricultural, hydrologic, marine, coastal, and health impacts for nearly all societies. For countries that are already under marginal environmental conditions for productive agriculture, or that already suffer substantial impacts from sea-level rise, the additional risks are especially troubling, and could easily begin to overwhelm reasonable investments in adaptation strategies.

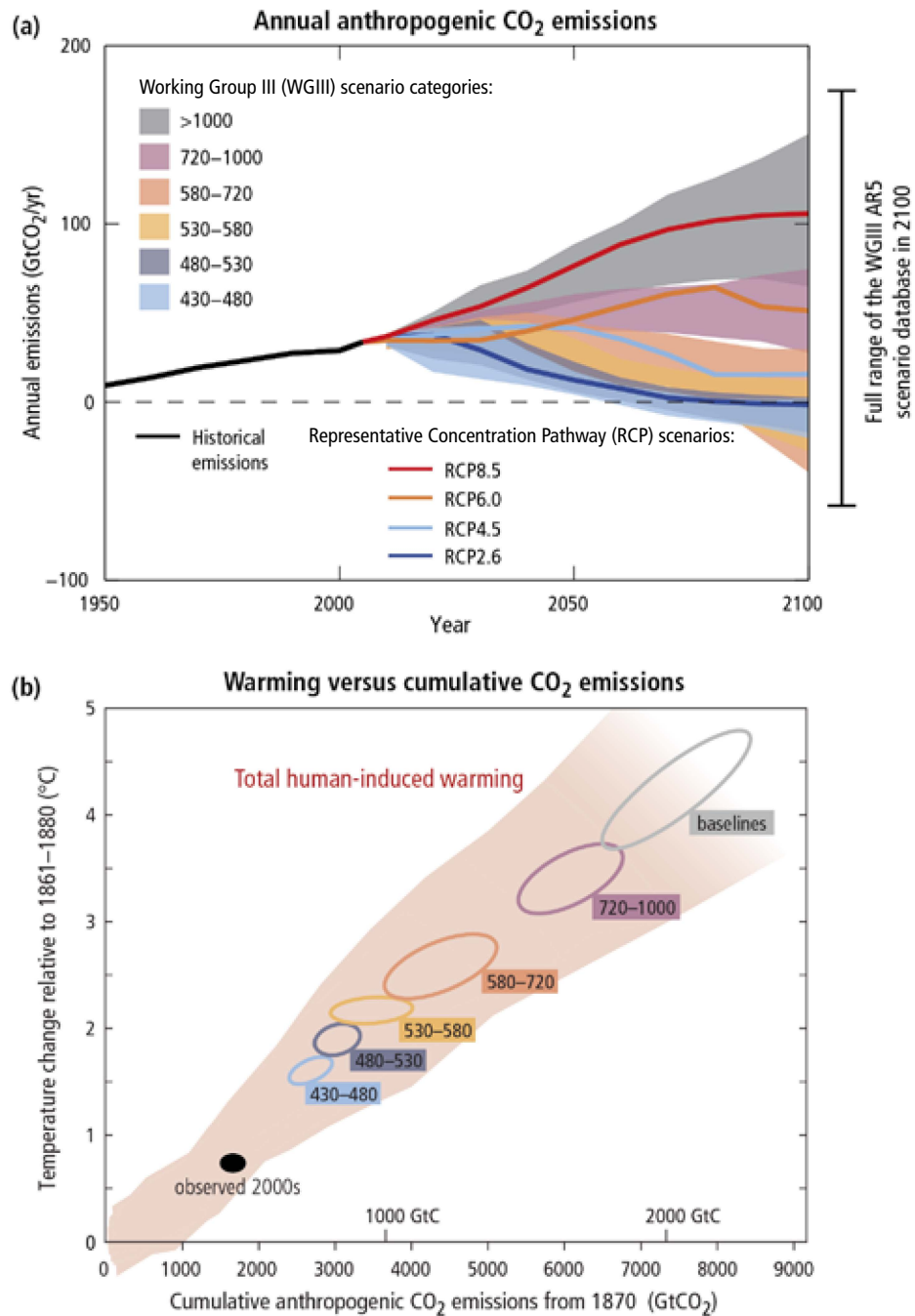
FIGURE 2: Regional Key Risks from Climate Change



Source: Figure SPM.8 from Climate Change 2014: Synthesis Report. Contribution of Working Groups I, II and III to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change [Core Writing Team, Pachauri, R.K. and Meyer, L. (eds.)]. IPCC, Geneva, Switzerland.

The international community has interpreted these conclusions as meaning that a “2 degree C” world is undesirable, and there is an international commitment that precedes the 2015 UN Paris climate talks (COP21) that nations will seek strategies that would hold global warming to below that level by 2100 (Jacoby, Janetos et al., 2014). But even this commitment is ambitious. As Jacoby and Janetos (2014 in NCA3) point out, emissions scenarios that come close to such a goal need to have annual global emissions peak at about 44 billion tons of CO₂ no later than around 2040, and decline rapidly thereafter—and global emissions were at 34 billion tons in 2011, and projected to rise, leaving very little headway for achieving the goal. The challenge of these types of “peak and decline” emissions scenarios is illustrated by the following figure (Figure 3) from IPCC Fifth Assessment Report (AR5), which compares the different scenarios analyzed by the IPCC. Note that all scenarios that would result in a warming of 2 degrees Celsius or less have this peak and decline feature.

FIGURE 3: Anthropogenic CO₂ Emissions



Source: Figure SPM.5 from Climate Change 2014: Synthesis Report. Contribution of Working Groups I, II and III to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change [Core Writing Team, Pachauri, R.K. and Meyer, L. (eds.)]. IPCC, Geneva, Switzerland.

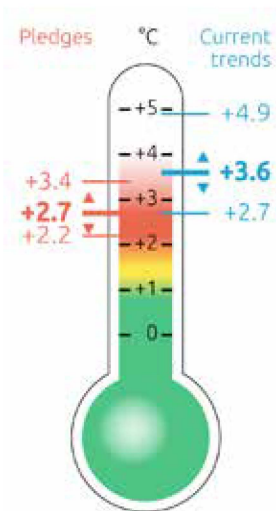
An additional challenge in the political commitment in meeting a 2 degrees C target is that the world has already warmed roughly a degree since the mid-19th century due mostly to an enhanced greenhouse effect from anthropogenic emissions. There is an additional roughly 0.5 degrees (IPCC, 2007) that is essentially “baked into” the Earth system, in the form of heat that is stored in the surface oceans that has not yet affected surface atmospheric temperatures. So even if emissions were to somehow stop immediately, and concentrations of greenhouse gases stay the same as at the close of the 20th century, there is still fairly substantial global warming that would occur, due to

this stored heat. A second component of the challenge in the global political commitment is that the consequences of the warming the world has already experienced are unequally distributed. Countries with high fractions of their borders along coastlines, or with large populations near the coast are already experiencing substantial damages from sea-level rise, for example. There is already evidence that the productivity of some crops has been affected, and unsurprisingly, the consequences for food security are higher in countries where agriculture is already a difficult activity because of shortages of rainfall.

Perhaps the major challenge, however, is the sheer magnitude of revamping the world's energy economy, and shifting a major fraction of it away from fossil fuels. Some changes can happen relatively quickly, as in the shift in the U.S. power supply from coal to natural gas, responding to large supplies and low prices of gas due to the abundance of shale gas. But the use of coal in the very large and growing economies of India and China continues to rise, even as they make large investments in renewable sources of energy. The availability of technologies, the potential use of natural ecosystems to sequester or withdraw carbon from the atmosphere, and the difficulty of ensuring that carbon prices reflect a full accounting of the damages from climate change and air pollution all make a rapid transition extremely difficult.

This difficulty is perhaps best exemplified by calculations of the expected increases in global annual average temperatures due to current policies. There are a number of efforts to track countries' current emissions, and to calculate in relatively simple ways the expected increases in global annual average temperatures by 2100. For illustrative purposes, we can use the calculations from the Climate Action Tracker website (<http://climateactiontracker.org>). It uses relatively simple carbon cycle models and global energy balance models to calculate that trends in current global emissions would lead to an increase in global annual average temperature of 3.6 degrees, with a range of 2.7 – 4.9 degrees, far above the agreed-on limit of 2 degrees Celsius.

The COP21 agreement, however, is built on Intended Nationally Determined Contributions (INDCs). By the outset of the COP, pledges from individual countries, which accounted for 94 percent of fossil fuel emissions, would lead to an increase of 2.7 degrees C, with a range of 2.2 – 3.4 degrees. This is still higher than the agreed-on goal, of course, but several of the large emitters, including the U.S. identified additional actions that could be taken to narrow the gap between the INDC-based calculation and the 2 degree C goal. If the timing of proposed actions were to be accelerated, this would also have the effect of narrowing the gap between the INDC calculation and the 2 degree C goal.



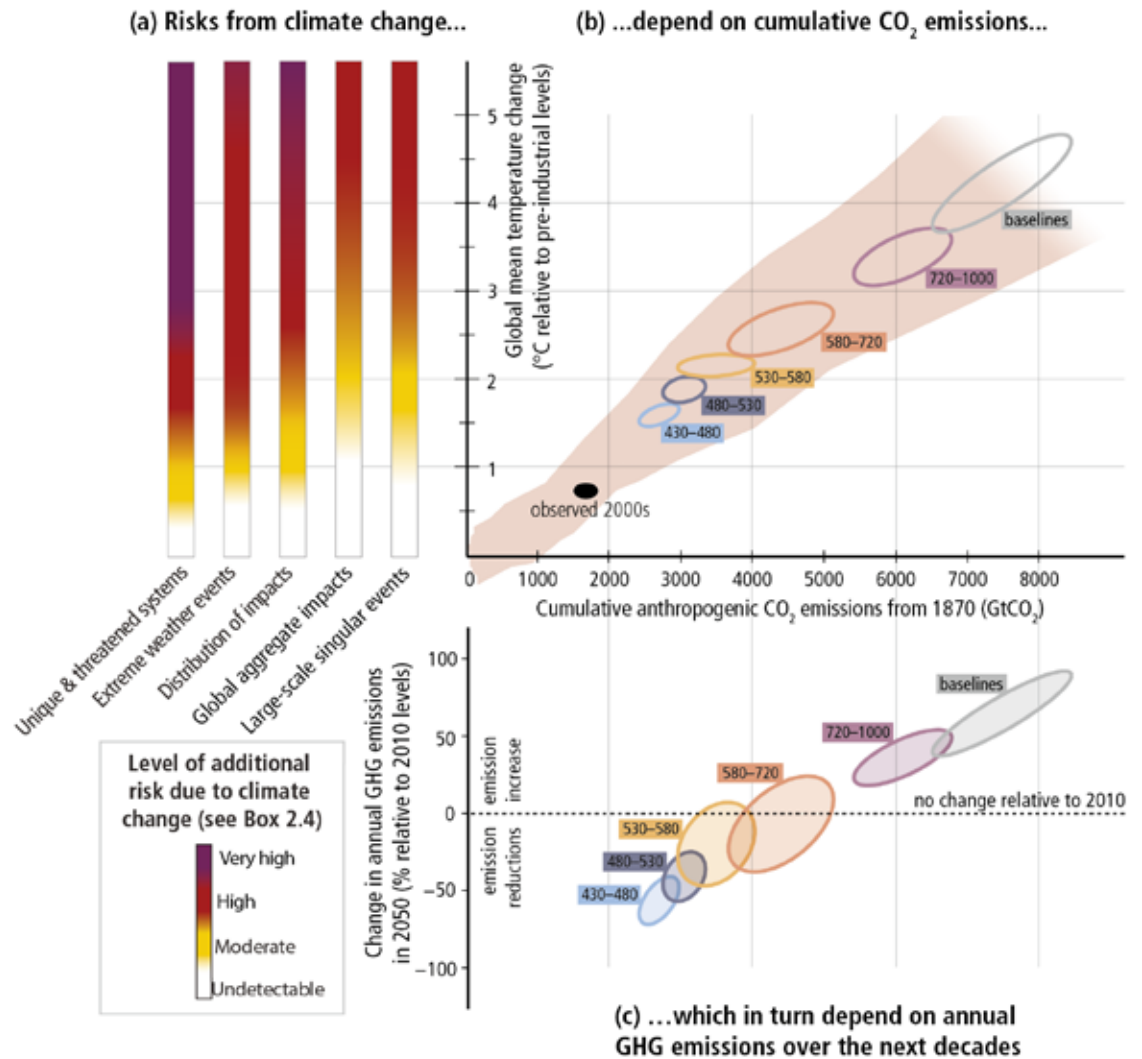
The thermometer shows the global-mean temperature increase above pre-industrial level by 2100, with an uncertainty range originating from carbon-cycle and climate modeling.

Even a simple visual comparison of the INDC-based calculations with the more comprehensive scientific analysis from IPCC demonstrates the magnitude of the emissions reductions challenge, and the urgency with which it must be met to achieve the agreed-on policy goals.

With a 2 degree C rise in global annual average temperatures, the risks associated with climate change would clearly increase above the current levels, and could not be fully ameliorated with adaptation actions. Because of this, and because of the existing level of damages from current change, COP21 also stated an aspirational goal of holding the global temperature increase to 1.5 degrees C, and requested IPCC to do a special report on the scientific issues involved in attempting to meet that goal. Although the IPCC special report has just begun its work, the magnitude of this additional challenge can be seen in the following figure (Figure 4).

Source: climateactiontracker.org
 ©2016 by Climate Analytics,
 Ecofys and NewClimate Institute.

FIGURE 4: Climate Change Risk Factors



Source: Figure SPM.10 from Climate Change 2014: Synthesis Report. Contribution of Working Groups I, II and III to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change [Core Writing Team, Pachauri, R.K. and Meyer, L. (eds.)]. IPCC, Geneva, Switzerland.

Attempting to hold global temperature increases to 1.5 degrees C will require reductions of annual CO₂ emissions in the neighborhood of 25 percent in 2050, compared to 2010 emissions, which is roughly a 50 percent reduction compared to 1990 emissions. This magnitude and rate of emissions reductions far exceeds even the 2 degree C goal, which the INDCs by themselves are likely to miss.

The COP21 agreement includes a mechanism by which countries will reconvene every five years, with a mandate for assessing their progress towards their INDC goals, and with an additional mandate for increasing their ambition for even more progress. The latter will be essential to have any chance of meeting an aspirational 1.5 degree C target, and even to increase the likelihood of reaching a 2 degree C target. The first such meeting will be in 2021, five years after the agreement enters into force, and since emissions will need to peak and decline in the 2030's time frame to reach the 2 degree C target—and even earlier for a 1.5 degree C time frame—the urgency is clear.

In order to have such large effects so quickly, the very large emitters (e.g, the U.S., EU, China, India, Russia, Brazil, Indonesia) must obviously make rapid progress on actually reducing emissions, not just capping them. But in addition, individual sectors of the global economy must also make such progress. This has been difficult to achieve in some sectors, such as transportation and trade, in part because those sectors continue to grow in the global economy, and in part because it has proven difficult to attribute their emissions to individual countries. Aviation and shipping, in particular, have proven to be extremely difficult challenges from this perspective. In addition, changes in the location of manufacturing from developed to developing economies, combined with changes resulting from meeting development goals of large-scale electrification result in those emissions being even more difficult to reduce than might otherwise be the case. Many of these emissions sources and sectors are strongly affected by the magnitude of international trade.

To meet the ambitious and difficult goals agreed to in COP21, it will be necessary to ensure that there are no “loopholes” in international agreements in other forums. International trade agreements have the potential to be such a loophole. International trade agreements have typically been negotiated in forums that are separate and independent of climate negotiations, which are typically the province

of environmental agencies and ministries. Trade and financial ministries have traditionally chosen to reduce barriers to trade, using purely economic criteria, without regard to what their impacts on carbon emissions might be. The failure to include the costs of climate change impacts in any way in the discussions of international trade has resulted in an imbalance in the way emissions due to international trade and its consequences have been evaluated.

This has resulted in the potential for conflict with the goals of COP21, especially with respect to shipping emissions, for example. There is as yet no clear way to mediate and reconcile conflicts when they occur. But given the difficulty and urgency of meeting the COP21 goals, finding appropriate means of identifying conflicts and appropriate ways to mitigate them assumes great importance, given the ongoing and growing risks of a changing climate.

“ The failure to include the costs of climate change impacts in any way in the discussions of international trade has resulted in an imbalance in the way emissions due to international trade and its consequences have been evaluated.”

References

Jacoby, H. D., A. C. Janetos, R. Birdsey, J. Buizer, K. Calvin, F. de la Chesnaye, D. Schimel, I. Sue Wing, R. Detchon, J. Edmonds, L. Russell, and J. West, 2014: Ch. 27: Mitigation. *Climate Change Impacts in the United States: The Third National Climate Assessment*, J. M. Melillo, Terese (T.C.) Richmond, and G. W. Yohe, Eds., U.S. Global Change Research Program, 648-669. doi:10.7930/JOC8276J.

Climate Change 2007: The Physical Science Basis. Contribution of Working Group I to the Fourth Assessment Report of the Intergovernmental Panel on Climate Change. Solomon, S., D. Qin, M. Manning, M. Marquis, K. Averyt, M.M.B. Tignor, H.L. Miller, Jr, Z. Chen (eds). Cambridge University Press, Cambridge, United Kingdom and New York, NY, USA.

Climate Change 2014: Impacts, Adaptation, and Vulnerability. Part B: Regional Aspects. Contribution of Working Group II to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change [Barros, V.R., C.B. Field, D.J. Dokken, M.D. Mastrandrea, K.J. Mach, T.E. Bilir, M. Chatterjee, K.L. Ebi, Y.O. Estrada, R.C. Genova, B. Girma, E.S. Kissel, A.N. Levy, S. MacCracken, P.R. Mastrandrea, and L.L. White (eds.)]. Cambridge University Press, Cambridge, United Kingdom and New York, NY, USA.

THE MARITIME SECTOR'S ROLE IN MEETING TRADE AND ENVIRONMENT GOALS

James J. Corbett

Many 21st century trade agreements offer the opportunity to advance three primary goals:

- 1) improve financial stability and extend access to economic prosperity;
- 2) promote human and community development; and
- 3) ensure environmental stewardship in both international and domestic contexts.

This paper considers how two trade policies, the Trans-Pacific Partnership (TPP) and the Transatlantic Trade and Investment Partnership (TTIP), may fail to address environmental benefits or drawbacks related to shipping and maritime transport, which necessarily will transport 90 percent of goods traded (by volume, and for some commodities by value). As a key mode of trade transport with both routine activities and the potential for incidents that cause air, water, and land pollution literally around the world, shipping deserves more attention in international trade agreements.

This paper begins with a brief overview of the TPP and TTIP, particularly their assessments of potential environmental impact. A discussion of the role of maritime sector environmental agreements and the role of international shipping in global trade is presented. Reviews prepared for organizations such as the Office U.S. Trade Representative, European Commission, and UK Parliament regarding maritime transport environmental impacts associated with the TPP and TTIP tend to suggest that the positive impacts outweigh negative impacts, although critical environmental issues are left unaddressed or “difficult to quantify” and assumed to be “relatively small.” Specifically, these environmental assessments identify three positive impacts and three negative impacts of the TPP; the positive impacts include better environmental enforcement, increased environmental awareness among nations as a correlated effect of economic prosperity, and export of innovative environmental technologies and best practices for environmental stewardship (Figure 1). This paper concludes with reflection on the state of knowledge for unaddressed and unquantified environmental impacts from shipping, which may challenge their dismissal as small and instead motivate additional analysis or research.

TPP and TTIP Background

The TPP agreement will engage 12 nations in an initial trade framework that could expand to include other Asia-Pacific nations. The TTIP is an agreement between the European Union (EU) (on behalf of member nations) and the United States (U.S.). The economic purpose of these agreements is generally to reduce trade barriers and enhance economic activity among the partners, and to provide policy instruments to negotiate and resolve conflicts that may arise. Among the potential conflicts, environmental impacts that may be important to one, some, or all partners are important concerns.

The TPP and TTIP elements that address environmental concerns have focused mainly on common concerns among the partners. For example, the TPP includes specific sections that address illegal fishing, endangered species trade, wildlife trafficking, illegal logging, and marine pollution from ships. While fishing, species, wildlife and logging provisions are not discussed in this paper, the TPP provisions for marine pollution from ships explicitly direct partners to implement standards set by the International Maritime Organization (IMO), the United Nations (UN) body designated to promote international environmental and safety policies for ships. In some contrast, the TTIP

more generally focuses on environmental concerns related to greater compatibility in standards and regulatory cooperation, where Europe and the U.S. may have developed different strategies and targets for environmental protection. The TTIP also engages environmental themes, such as sustainable development, carbon emissions and clean energy, which would only apply to shipping through EU or U.S. domestic regulation.

The TPP's specific mention of marine pollution provides direct linkage to consider the maritime sector. According to a summary by USTR.gov, "TPP Parties also agree to protect the marine environment from ship pollution." The TPP Environment Chapter 20, Section 20.6, requires nations to implement IMO environmental regulations for ships, make information public about their domestic implementation of IMO standards, and to cooperatively pursue further environmental goals for ships. These may include working to prevent episodic/accidental pollution from ships, to control and reduce routine operational discharges or emissions, to promote technology innovation and adoption, and to identify special geographic areas and cooperative enforcement measures.

The TTIP does not directly mention ship pollution or protection of the marine environment from shipping activity that may be unregulated or harmful. The TTIP mentions sustainable development goals, which refer to general international environmental protection objectives and sustainable development goals that may more vaguely include domestic policies to address ship pollution or port/regional pollution related to maritime trade. The only TTIP mention of the IMO is in reference to the use of IMO vessel identifying numbers for traceability of fishing vessels (European Commission, 2016a, b; UK Parliament, 2015). While no specific environmental provisions apply to the maritime sector, the TTIP may be interpreted to affect international shipping cabotage laws, such as the U.S. Jones Act, which are domestic policies protecting a nation's fleet from competition by requiring goods moved within the nation to be transported by that nation's registered ships (SEA Europe, 2014). The TTIP has been identified by some (SEA Europe, 2014) as a vehicle to promote so-called competition policies that would promote innovation and improve the efficiency of port facilities and vessels engaging in expanded trade.

Maritime Transportation Overview

International shipping uses a network of routes and ports to load and discharge cargoes that would be affected by changing trade patterns, including those pattern changes resulting from expanded trade. As such, the vessel activity that may increase in one or more ports (e.g., in the U.S.) would be directly associated with proportional increases in vessel activity at port-pairs or port-sets visited by vessels serving that trade route (e.g., maritime activity among partner nations and non-partner

nations that are engaged in routine trade via vessel arrivals and departures to their sea ports). Environmental impacts that may be associated with increased vessel activity could therefore be aggravated without control measures for ships or port activities. With environmental regulation, improvements in environmental performance by ships could benefit the coastlines and port regions of trading nations as fleets transport increased trade.

“With environmental regulation, improvements in environmental performance by ships could benefit the coastlines and port regions of trading nations as fleets transport increased trade.”

The environmental performance of shipping affects multiple scales of impact, from localized port pollution to transboundary and international pollution. Moreover, shipping activity can pollute water, air, and land (surface or subsurface), which harms the health of coastal communities. Pollution can occur through episodic incidents such as oil spills, and through routine, recurring discharges such as air emissions and ballast water discharge that may transport invasive species. Ships are a major

contributor to greenhouse gas (GHG) emissions, producing to 2-3 percent of global GHGs, ranking the industry in the top 10 among emitting nations with about 1000 million tonnes CO₂ (Smith et al., 2014). Importantly, the recent climate agreement in Paris (COP21) excluded reference to international shipping and aviation, which defers any commitment for GHG reduction strategies for these sectors to their UN regulatory bodies (UNFCCC, 2015).

All nations in the TPP negotiation (Australia, Brunei Darussalam, Canada, Chile, Japan, Malaysia, Mexico, New Zealand, Peru, Singapore, United States, and Viet Nam) participate in the IMO's International Convention for the Prevention of Pollution from Ships (MARPOL) of 1973/78, covering oil and noxious liquids, and most nations have ratified other IMO environmental agreements (see Table 1). With regard to invasive species, the IMO Ballast Water Convention of 2004 is not yet ratified by the necessary number of nations to enter into force; five of the TPP nations have ratified the Ballast Water Convention as of July 2016. With regard to emissions, all but three nations have ratified MARPOL Annex VI, which has been a primary instrument for discussing emerging standards to limit GHGs and improve energy efficiency in international shipping fleets.

The EU nations and the United States are also engaged in IMO environmental agreements (see Table 2), with nearly unanimous ratification of many MARPOL provisions. Notably, the United States has not ratified IMO standards for sewage pollution (MARPOL Annex IV), partly because U.S. policy requires compliance with the Clean Water Act (CWA). Austria and Hungary have yet to ratify MARPOL Annex VI standards for air pollution from ships, although the standards are enforced in Europe. Eight European nations have ratified the Ballast Water Convention.

TABLE 1. Summary of TPP Ratification Status for Selected IMO Environmental Agreements

TPP Nation	MARPOL (Annex I/II) Oil and Noxious Liquids Pollution	MARPOL (Annex III) Harmful Substances Cargoes Pollution	MARPOL (Annex IV) Sewage Pollution	MARPOL (Annex V) Garbage Pollution	MARPOL (Annex VI) Air Pollution (and GHGs)	Ballast Water Convention
Australia	X	X	X	X	X	
Brunei Darussalam	X					
Canada	X	X	X	X	X	X
Chile	X	X	X	X	X	
Japan	X	X	X	X	X	X
Malaysia	X	X	X	X	X	X
Mexico	X			X		X
New Zealand	X	X		X		
Peru	X	X	X	X	X	X
Singapore	X	X	X	X	X	
United States	X	X		X	X	
Viet Nam	X	X	X	X	X	

TABLE 2. Summary of TTIP EU Member Nations and U.S. Status for Selected IMO Environmental Agreements

TTIP Nation	MARPOL (Annex I/II) Oil and Noxious Liquids Pollution	MARPOL (Annex III) Harmful Substances Cargoes Pollution	MARPOL (Annex IV) Sewage Pollution	MARPOL (Annex V) Garbage Pollution	MARPOL (Annex VI) Air Pollution (and GHGs)	Ballast Water Convention
Austria	X	X	X	X		
Belgium	X	X	X	X	X	X
Bulgaria	X	X	X	X	X	
Croatia	X	X	X	X	X	X
Cyprus	X	X	X	X	X	
Czech Republic	X	X	X	X	X	
Denmark	X	X	X	X	X	X
Estonia	X	X	X	X	X	
Finland	X	X	X	X	X	X
France	X	X	X	X	X	X
Germany	X	X	X	X	X	X
Greece	X	X	X	X	X	
Hungary	X	X	X	X		
Ireland	X	X	X	X	X	
Italy	X	X	X	X	X	
Latvia	X	X	X	X	X	
Lithuania	X	X	X	X	X	
Luxembourg	X	X	X	X	X	X
Malta	X	X	X	X	X	
Netherlands	X	X	X	X	X	X
Poland	X	X	X	X	X	X
Portugal	X	X	X	X	X	
Romania	X	X	X	X	X	X
Slovakia	X	X	X	X	X	X
Slovenia	X	X	X	X	X	X
Spain	X	X	X	X	X	X
Sweden	X	X	X	X	X	X
United Kingdom	X	X	X	X	X	
United States	X	X		X	X	

At the IMO, active consideration of standards to reduce GHGs is ongoing. Regulations have mainly focused on energy efficiency measures through design standards and operational monitoring. These policies are informed by a series of IMO GHG studies, with the insight that shipping currently accounts for approximately 3 percent of global CO₂ from anthropogenic combustion of fossil fuels (Buhaug et al., 2009; Skjølsvik et al., 2000; Smith et al., 2014). The challenge to energy efficiency

“ ... the energy demand and air emissions from shipping are expected to grow with expanded trade volumes.”

approaches to reduce ship GHGs is that the energy required to fuel ships engaged in international transport of trade increases with growth in trade volume, even after considering energy efficiency improvements through operations and technologies. Therefore, the energy demand and air emissions from shipping are expected to grow with expanded trade volumes. Because the international maritime sector (and international aviation) were removed

from draft text during the COP21 Paris negotiations, they are excluded from any climate change commitments that member nations must pursue. Shipping GHGs, therefore, may not be addressed by environmental commitments in member nation trade agreements because a) there may be no commitments to reference within a partner nation, and b) clear commitments have not been set at IMO that would be part of provisions that apply to partner nations.

The Ballast Water Convention will set discharge standards for ships that will require treatment of ballast water. Ballast water management systems must be approved by the IMO, and may use biocides or chemicals, physical filtration, and other technologies to prevent aquatic invasive species introduction by reducing the number of viable organisms that are discharged. The Ballast Water Convention is not yet ratified at IMO, where delegates are simultaneously working to change how treatment systems are tested and approved.

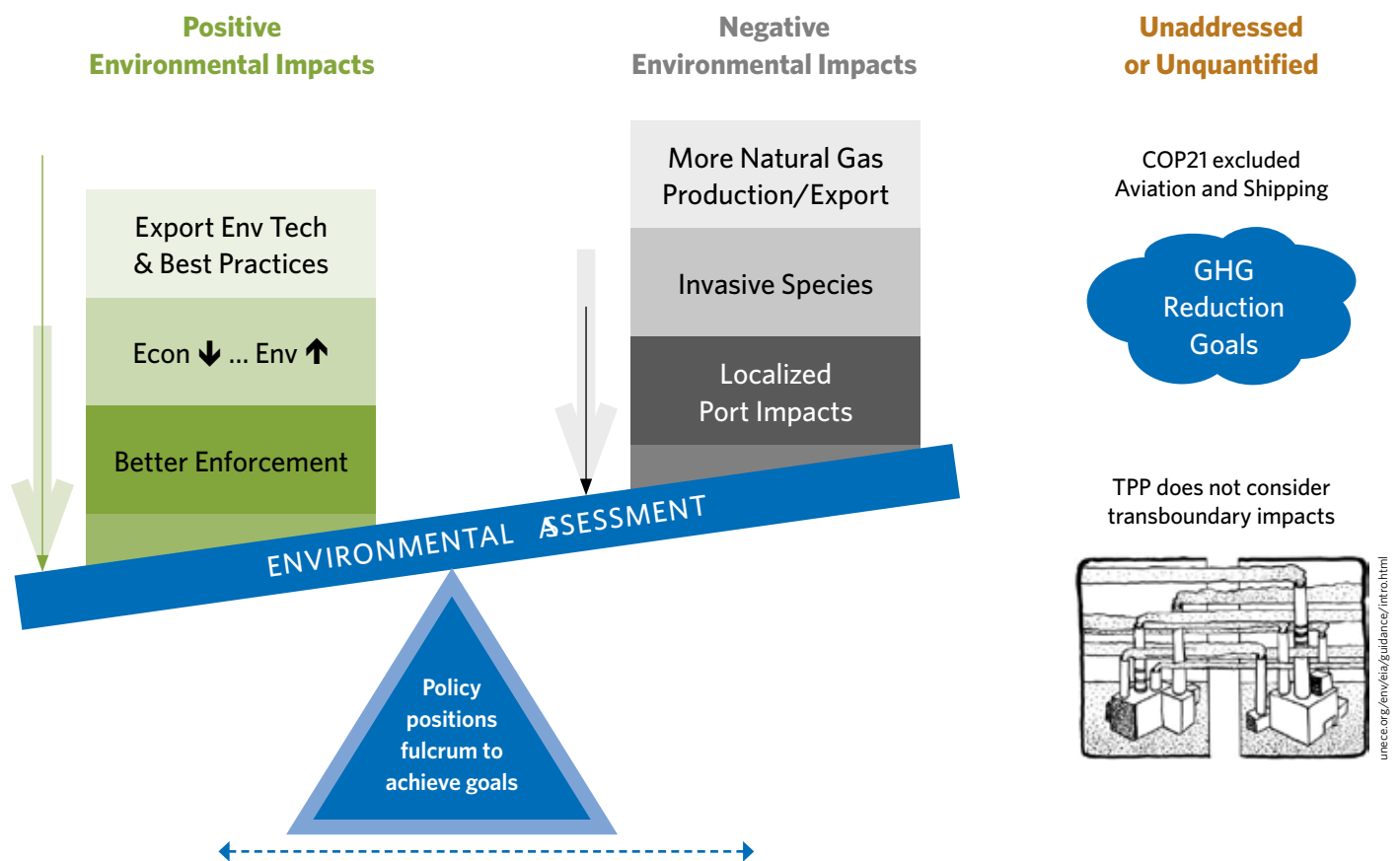
The IMO process is concurrent with United States efforts to develop regulation of ballast water, where U.S. Coast Guard (USCG) regulations require a separate technology approval process. EPA regulations that have attempted to harmonize U.S. ballast treatment standards under the CWA with IMO. Recent federal court judgment (United States Court of Appeals for the Second Circuit, 2015) found the EPA adoption of IMO standards failed to meet CWA regulations requiring technology forcing standards. And in 2016, the 114th Congress inserted into the National Defense Authorization Act a chapter on Ballast Water, Title XXXVI, that would reassign ballast water regulatory authority to the USCG, thereby circumventing the CWA altogether (House of Representatives et al., 2016). The U.S. Administration opposes this provision for a number of reasons related to fighting the spread of invasive species, enforcement, and jurisdictional precedent (U.S. Executive Office of the President, May 16, 2016).

Maritime Sector Environmental Risks and Benefits of Trade Partnerships

With regard to maritime specific assessments of benefits and risks to the environment that have been associated with the TPP, and given that there are no specific environmental provisions under the TTIP, the discussion here considers generally the applicability of key benefits and risks associated with maritime shipping's role in expanded trade. The primary resources are the major U.S. documents reviewing the TPP with regard to the environment, namely the December 2015 report by the Trade and Environment Policy Advisory Committee (TEPAC, 2015), and the Interim Environmental Review of the TPP by the Office of the U.S. Trade Representative (Office of the U.S. Trade Representative, 2013).

The key benefits and risks can be illustrated in Figure 1. Positive environmental benefits that could spill over to maritime shipping include: commitments to enforce environmental standards; general correlations showing environmental stewardship increasing with growing economies; and reduced trade barriers that can facilitate the export and technology transfer of green technologies. Negative impacts or risks that have been identified include: so-called “localized port impacts,” increased introduction of invasive species, and increased export of natural gas energy (perceived as a special risk distinct from liquid petroleum products). The current qualitative reviews of environmental performance of TPP do not address or quantify GHG reduction goals. Reviews of TTIP do, however, identify low-emission, climate-resilient development, but the application may apply only indirectly to vessel technologies. Also not considered are transboundary impacts that may be considered related to the long-range (transboundary) transport of air emissions from ships. These are known to contribute to ambient air pollution premature deaths in coastal communities (Corbett et al., 2007; Winebrake et al., 2009).

FIGURE 1. Illustration Summarizing TPP Environmental Assessment for Maritime Sector



Few studies address maritime shipping environmental performance in the context of either the TPP or TTIP. Most attention by non-governmental organizations (NGOs) and researchers is focused on domestic environmental issues related to resource conservation such as logging, fishing, and wildlife products, environmental protection and enforcement provisions for international greenhouse gas agreements, and domestic regulations (Schott and Muir, 2012).

More attention to maritime issues in environmental reviews of trade partnerships is merited. Given that shipping impacts occur along an entire coastline, not simply localized near ports, environmental stewardship objectives can be undermined by changing trade patterns or growing ship traffic. The capacity exists to evaluate international shipping impacts on a national or multinational scale more fully than the qualitative legal reviews of trade environmental aspects to date. The opportunity and need exists to develop an interdisciplinary research agenda combining economics and law, engineering and technology innovation, and large scale environmental science that considers ocean, atmosphere, and terrestrial responses to shipping activity.

Conclusion

Trade agreements advance goals to increase access to economic prosperity, to promote development, and to ensure environmental stewardship among the partners. However, these agreements do not fully address environmental benefits or drawbacks related to shipping and maritime transport, which necessarily will perform most of the international transport of goods.

Trade partnerships have focused mainly on common environmental concerns, such as illegal fishing, endangered species trade, wildlife trafficking, and illegal logging. The TPP addresses marine pollution from ships through member implementation of standards set by the IMO. The TTIP focuses on environmental compatibility in standards and regulatory cooperation and engages environmental themes, such as sustainable development, carbon emissions, and clean energy, which would only apply indirectly to shipping.

Environmental reviews of the TPP and TTIP tend to suggest that the positive impacts outweigh negative impacts, but assume maritime environmental issues to be “difficult to quantify” and therefore “relatively small” when they are mostly unaddressed or not identified. Policy-focused, interdisciplinary research is needed to bring the substantial knowledge of environmental impacts from international shipping into better context with regard to environmental aspects of expanded trade.

References

- Buhaug, Ø., Corbett, J.J., Endresen, Ø., Eyring, V., Faber, J., Hanayama, S., Lee, D.S., Lee, D., Lindstad, H., Mjelde, A., Pålsson, C., Wanqing, W., Winebrake, J.J., Yoshida, K. (2009). Second IMO Greenhouse Gas Study 2009. International Maritime Organization, London.
- Corbett, J.J., Winebrake, J.J., Green, E.H., Kasibhatla, P., Eyring, V., Lauer, A. (2007). Mortality from Ship Emissions: A Global Assessment. *Environmental Science & Technology* 41: 8512–8518.
- European Commission. (2016a). Trade and Sustainable Development, Belgium.
- European Commission. (2016b). Trade favouring low-emission and climate-resilient development, Belgium.
- House of Representatives, Thornberry, M., Smith, A. (2016). National Defense Authorization Act for Fiscal Year 2017, in: House of Representatives, (2015–2016), t.C. (Eds.), H.R. 4909, Washington, DC.
- Office of the U.S. Trade Representative. (2013). Interim Environmental Review: Trans-Pacific Partnership Agreement, Washington DC.
- Schott, J.J., Muir, J. (2012). Environmental issues in the TPP. In: *The Trans-Pacific Partnership: A Quest for a Twenty-First Century Trade Agreement*, pp. 187-199, C.L. Lim, D.K. Elms, P. Low, eds. Cambridge University Press.
- SEA Europe. (2014). “SEA Europe input on future EU-US Transatlantic Trade and Investment Partnership,” Association for Ships and Maritime Equipment, (Ed.). SEA Europe, Belgium.
- Skjølvsvik, K.O., Andersen, A.B., Corbett, J.J., Skjelvik, J.M. (2000). Study of Greenhouse Gas Emissions from Ships (MEPC 45/8 Report to International Maritime Organization on the outcome of the IMO Study on Greenhouse Gas Emissions from Ships). MARINTEK Sintef Group, Carnegie Mellon University, Center for Economic Analysis, and Det Norske Veritas, Trondheim, Norway.
- Smith, T.W.P., Jalkanen, J.P., Anderson, B.A., Corbett, J.J., Faber, J., Hanayama, S., O’Keeffe, E., Parker, S., Johansson, L., Aldous, L., Raucci, C., Traut, M., Ettinger, S., Nelissen, D., Lee, D.S., Ng, S., Agrawal, A., Winebrake, J.J., Hoen, M., Chesworth, S., Pandey, A. (2014). Third IMO GHG Study 2014. International Maritime Organization (IMO), London, UK.
- Trade and Environment Policy Advisory Committee (TEPAC). (2015). The U.S.- Trans-Pacific Partnership Free Trade Agreement: Advisory Committee Report. U.S. Trade Representative, Washington, DC.
- UK Parliament. (2015). Transatlantic Trade and Investment Partnership (TTIP): Response to Environmental Audit Committee. Department for Business, Innovation & Skills. (Ed.) Government Response to the House of Commons Environmental Audit Committee’s Ninth Report of Session 2014-05. Available at <http://tinyurl.com/UK-Response-2015>
- United Nations Framework Convention on Climate Change (UNFCCC). (2015). Adoption of the Paris Agreement, in: Conference of the Parties, Twenty-first Session. (Ed.). Report CCC/CP/2015/L.9/Rev.1, United Nations Framework Convention on Climate Change (UNFCCC), Paris. Available at <http://tinyurl.com/COP21-FCCC-Report>
- United States Court of Appeals for the Second Circuit. (2015). On Petitions for Review by the U.S. EPA: *National Resource Defense Council v. United States Environmental Protection Agency*, 13-1745(L) New York, NY.
- United States Executive Office of the President, Statement of Administrative Policy, May 16, 2016. Available at <http://tinyurl.com/USEOP-16May16>
- Winebrake, J.J., Corbett, J.J., Green, E.H., Lauer, A., Eyring, V. (2009). Mitigating the Health Impacts of Pollution from Oceangoing Shipping: An Assessment of Low-Sulfur Fuel Mandates. *Environmental Science & Technology* 43: 4776-4782.

NO CONTEST: GREEN VS. BROWN SUBSIDIES UNDER THE TTIP

Irene Monasterolo and Marco Raberto

Sustained investment in renewable energy technology recently has been recognized as a global policy imperative to speed up the transition to a low carbon economy and avoid the negative impacts of climate change. At the same time, both uncertainty about green policies and the

persistence of fossil fuel subsidies could counteract efforts to meet the targeted limits on global temperature increase agreed to at the 2015 UN Paris climate conference as well as efforts to provide access to clean energy for all as called for in the UN Sustainable Development Goals (SDG 7). Serious concerns have been raised that international trade agreements under discussion, such as the Transatlantic Trade and Investment Partnership (TTIP), could increase emissions by easing trade of fossil fuels and fossil fuel-intensive goods. Drawing on our new modelling estimates, we demonstrate that a gradual phasing out of fossil fuels subsidies

“ Serious concerns have been raised that international trade agreements under discussion, such as the Transatlantic Trade and Investment Partnership (TTIP), could increase emissions by easing trade of fossil fuels and fossil fuel-intensive goods.”

and the phasing in of green subsidies would not only contribute to improved performance of the real economy in Europe but also stabilize the credit market by smoothing the risk associated with unstable fossil-fuel intensive financial markets.

Background

The latest scientific evidence shows an increase in anthropogenic climate change due to the growing concentration of greenhouse gas (GHG) emissions in the atmosphere and increases in average global temperatures, creating deep socio-economic impacts that will vary in intensity across and within regions (IPCC, 2014; WB, 2013; U.S. NCA, 2014). The IPCC report also indicates a 2 degree Celsius temperature increase scenario above the pre-industrial period as the upper limit for preserving ecosystems and guaranteeing the well-being of future generations. Therefore, the concept of carbon budget, i.e., the amount of cumulative CO₂ emissions in the atmosphere that are consistent with the 2 degrees C scenario, has been introduced and set at 2900 GtCO₂. Yet, in 2014 a total amount of 2014.6 GtCO₂ was reached (Le Quéré et al., 2015).

The UN climate change conference held in Paris in December 2015 called for a fast transition to a low carbon economy based on divestment from fossil fuels and investments in renewable energy sources. Green fiscal policies, such as a carbon tax and the reform of fossil fuel subsidies (Kim and Lagarde, 2015) as well as green monetary instruments, are potentially very important to mobilize capital into the so-called mission-oriented green investments, by decreasing risk perception (Mazzucato, 2015). Green fiscal and monetary policies would not only contribute to decreased emissions in the atmosphere and support the transition toward a low carbon economy, but also mitigate the risk of carbon stranded assets potentially faced by investors (Caldecott and Mc Daniels, 2014; Lazarus and Tempest, 2014). Climate mitigation policies' potential risk to the real economy, and to some extent the finance sector, have begun to be investigated and they appear to be reasonably substantial (Batten et al. 2016; ESRB, 2016). For instance, Battiston et al (2016) performed a climate stress test on the Euro-area financial sector and found that financial exposure

to climate-policy relevant sectors large (40–54 percent), heterogeneous, and possibly amplified by indirect exposures via financial counterparties (40 percent).

At the same time, public support for continued fossil fuel R&D and investments contributes to increased uncertainty about a realistic shift toward renewables, and questions remain about the effects of phasing out of fossil fuel subsidies and the increase in renewable energy incentives on macro-economic and financial stability.

New trade agreements under discussion, such as the TTIP between the United States (U.S.) and the European Union (EU), could complicate the picture and counteract climate mitigation efforts by decreasing non-tariff barriers (NTBs) for goods and services traded between the countries (i.e., lowering the applicable environmental standards already in place), or by promoting trade of fossil fuel-intensive goods. As recently shown by Contestabile (2015), international trade policies could influence climate change mitigation efforts by fostering trade liberalization in high fossil fuels or CO₂ intensive sectors. For example, the agricultural sector, which is a key area under discussion in the TTIP negotiations, is responsible for a large share of GHG emissions (14 percent in the EU) and benefits from generous government subsidies in most of the countries and regions in the world (see, for instance the Common Agricultural Policy in the EU). Therefore, a further liberalization of trade in agricultural products between the EU and U.S. could hinder the success of climate mitigation efforts. But we still know little about how climate mitigation and trade liberalization policies work in concert; no methodological framework has been applied yet to analyze the interaction of climate and trade policies, and their combined impact on macro-economic and financial sector's performance.

A Closer Look at the Interactions: the Impact of Subsidies

In this paper we show how policies that promote divestment from fossil fuel-intensive production and support cleaner energy production (e.g., tax incentive policies or renewable portfolios standards in the US, and feed-in-tariffs in the EU) could contribute to improving the performance of the real economy and stabilizing the credit market, leading to positive socio-economic impacts for society (for model details and analysis, see Monasterolo and Raberto; 2016, 2016b). We compare scenarios that imply different “shades” of green policies based on (i) progressive phasing out of public subsidies to fossil fuel R&D and production (e.g. tax rebates to mining companies), and (ii) a gradual increase in the introduction of public subsidies for green energy production (e.g. tax rebates for investments in and production of renewable energy). In particular, we compare a “business as usual” scenario with full government support for fossil fuel production alongside alternative cleaner energy scenarios, showing their effects on the performance of the real economy and the credit sector. We then analyze the impact of green fiscal policies on investment creation and GDP, their distributive effects on jobs, wages, capital formation, firms’ performance, banks’ liquidity and balance sheets, and government budgets. In doing so, we show explicitly how public policies could create both disincentives and incentives for investors in the fossil fuel and renewable energy sectors. Our results show that energy policies that support fossil fuel-based energy production could:

- Accentuate distortions in the economy by increasing the level of general taxation to finance subsidies to the mining company in the fossil (brown) sector;
- Impose a universal public cost that benefits limited private interests, increasing wealth concentration in the brown sector and inequality in the system;
- Increase export of wealth from the domestic to the foreign economy through sustained import of raw materials and energy that are necessary for the brown sector's production, thus lowering investments in the domestic economy.

This analysis is important to consider in the current trade negotiations. It sheds light on the potential negative implications of increased trade liberalization (and thus production) of fossil fuel- and CO₂-intensive goods on the macro-economic and credit market performance and the socio-economic gains of strengthening public support and regulation for the renewable energy sector. This is an especially important consideration in a period of slow economic growth, in particular in the EU.

Assessing the Impact of Trade on Climate Change: Insights from Current Analyses

Given the lively discussion surrounding the ongoing TTIP negotiations between the U.S. and the EU, the potential impact of the trade agreement on economic growth and the labor market has come under scrutiny by economic analysts. In particular, two models based on the equilibrium approach by Ecorys (EC, 2013) and the Centre for Economic Policy Research (CEPR, 2013) using information from the Global Trade Analysis Project (GTAP) were recently applied. The results show small net positive effects of the trade agreement on countries' exports at the cost of a penalization of internal trade, thus resulting in small increases in GDP (Table 1). The U.S. appears to be better off in terms of export gains in comparison to the EU (respectively 8 percent vs. 5.9 percent according to CEPR, and 2.7 percent vs. 0.9 percent according to Ecorys), while the EU will perform slightly better than the U.S. in terms of GDP gains (respectively 0.49 percent vs. 0.4 percent gain according to CEPR, and 0.34 percent vs. 0.13 percent according to Ecorys). In order to reach such results with scenarios by 2027, an ambitious 25 percent decrease in non-tariff barriers (NTBs) is required.

Different results are shown by Capaldo and Izurieta (2016) and Capaldo (2014) who apply the UN Global Policy Model (UN-GPM), a Keynesian model based on "effective demand" where prices don't clear markets, and the employment level depends on the level of effective demand. The results show much smaller impacts on both trade partners, with the EU being worse off both in terms of export (-1.29 percent) and GDP performance (-0.26 percent). In contrast to the CEPR and Ecorys' models, UN-GPM also displays the effects on employment, again with a negative impact on the EU (-583,000 units) and gain for the U.S. (784,000 units).

TABLE 1: Models' Estimates of TTIP Effects on Export, GDP and Jobs

		CEPR	Ecorys	UN-GPM
Export	EU	5.90%	0.90%	-1.29%
	US	8%	2.70%	1.02%
GDP	EU	0.49%	0.34%	-0.26%
	US	0.40%	0.13%	0.36%
Jobs	EU	na	na	-583000
	US	na	na	784000

Notes: for CEPR and Ecorys scenarios results are at 2027

These models display who potentially stands to win or lose from TTIP in aggregate terms, but they have a number of limitations. First, they provide a static image of the structure of the economy

because they neglect the dynamic cross-sectors' interactions and impose an artificial relationship between income share of wages capital. In addition, they don't include a micro-economic dimension to analyze the diversity of trade agreement's impact on a variety of economic actors that characterize the real economy. Ecorys and CEPR models assume that wages and prices are fully flexible and adjust quickly according to supply and demand in all sectors, thanks to an immediate price response that allows appropriate decrease of labor costs to reach full employment. But in doing so, they don't consider the adjustment costs of displaced workers from less competitive sectors; thus, they are not able to assess the distributive implications of trade agreements.

In addition, none of these models includes a financial sector and don't consider its relation with the real economy; they neglect the financial sector's fundamental role in shaping the economic transition through capital borrowing, as well as its central role in risk creation and the cascading effects on the real economy.

Finally, these models don't include the role of natural resources and energy in the production function, neglecting the impact of resource depletion on price volatility and thus on production costs. In particular, they are not able to shed light on the growing costs of the negative environmental externalities caused by trade agreements and how they will impact other associated economic agents (high/low skilled workers, high/low wages jobs, capital owners or workers), i.e., those who will eventually have to cover the externalities' costs. Indeed, it was recognized that most trade agreements do increase emissions (WTO-UNEP, 2009) and end up worsening countries' environmental legislation by introducing lower environmental standards.

Ecorys estimates that the trade agreement will generate only 0.07 percent increase in greenhouse gas emissions from the baseline (or 11 million tonnes) because the model doesn't account for the negative externalities of several NTBs, such as relaxing current regulation on subsidies to fossil fuels. Yet, a change in regulatory framework that reduces countries' existing environmental standards has been recognized as a main source of risk for climate change (Porterfield and Gallagher, 2015). In the TTIP negotiations, a proposed modification of the U.S. fossil fuels export regime that would guarantee free export of crude oil and gas from the U.S. to the EU by granting export licenses automatically is a case in point.

ZEROing in on Fossil Fuels Subsidies: A New Approach

None of the models discussed above (nor the EC commissioned study that examines the impacts of the TTIP on the environment) explicitly model the impacts of climate sensitive subsidies both on the production factors of the real economy and on the credit market.

To address these gaps, we introduce a new modeling approach, the **€**IRIN System Dynamics Model that provides a full account of the real economy in terms of production, consumption, employment, income distribution, public finances, and includes the credit sector (for a full discussion of the model and results see Monasterolo and Raberto, 2016).

€IRIN allows us to simulate six policy scenarios to examine the various types of fiscal support that is or could be offered to climate-sensitive production. The first three scenarios investigate the impact of fossil fuel subsidies at full and reduced levels on the real economy and the credit market, including a full phasing out. The latter three investigate how utility companies could benefit from green policies supporting renewable energy investments and production to increase renewable energy generation capacity through tax-supported rebates for the cost of solar panels. All of the green policy scenarios assume there is no corresponding public support for fossil fuels.

TABLE 2: EIRIN Model's Scenarios

	Brown subsidy (mining company)	Green subsidy (solar panels)	The six policy scenarios are:
Scenario 1 (S1)	100%	0%	"Business as usual" i.e., full government support (e.g. through 100 percent tax rebate to mining company)
Scenario 2 (S2)	50%	0%	50 percent reduction in government support
Scenario 3 (S3)	0%	0%	A full phasing out of government support
Scenario 4 (S4)	0%	5%	5 percent government support to green energy investments (e.g. though tax incentives for solar panels)
Scenario 5 (S5)	0%	10%	10 percent government support to green energy investments
Scenario 6 (S6)	0%	15%	15 percent government support to green energy investments

The results from our modeling exercise are striking and intuitive, and driven by three elements: the distributive effects of fiscal imposition (taxation) on economic agents (i.e. taxpayers); import of raw materials and energy from the rest of the world; new deposits and demand for credit in the credit sector.

The results (Table 3) show that full government support for fossil fuels (S1) represents the worst case with negative effects on production factors, such as capital accumulation and unemployment, and on bank's balance sheets and endogenous money creation (i.e. new lending by banks). Indeed, bank's liquidity shows the worst performance across the six scenarios as a consequence of the high import of energy and raw materials from the foreign economy to be used as an input for energy production in the brown sector. S1 also shows high distortive costs for the economy because the government imposes higher taxation on workers, firms and dividends to cover the costs of tax rebates to mining company for fossil fuels-based energy production. In S1, full subsidies to the mining company to support fossil fuels R&D and production are financed by the government through an increase in general fiscal imposition on households (tax on labor, corporate and dividends). Import of energy and raw material is sustained under all public support to fossil fuels' scenarios because it is needed to produce energy out of fossil fuels. Such import represents a wealth drain from the domestic economy to foreign economies, wealth that could be invested in the domestic real economy, with positive effects on investments, employment, wages and the credit market, and the country's balance of payments with the rest of the world.

In S1 and S2 we notice a sustained decrease in bank's liquidity and lower deposits and new lending as a result of the higher import of raw materials and energy needed to produce fossil fuels-based energy and support the production in the brown sector, which is raw material intensive. In S2, following a decrease in the subsidy for mining companies, we notice a general improvement in the performance of the real economy due to (i) the decrease of taxes used to finance subsidies to mining companies and, thus, on brown energy production, and (ii) the increase in government's revenues due to the contribution of the mining company to the tax system, which contributes to the creation of fiscal space for supporting investments in the green sector.

Phasing out fossil fuels' subsidies (no tax rebates to mining company) contributes to improving the performance of the real economy because the level of taxation applied to the model's agents decreases, and also mining companies contribute to the tax system, thus increasing government tax revenues. Bank liquidity and deposits show respectively a lower decrease and a higher increase as a consequence of lower oil import from the rest of the world. Yet, in the full decoupling scenario (S3) bank liquidity and deposits remain on similar levels as in the S2 and S1 as a consequence of continued import of raw materials used in the brown sector's production.

The scenario with 15 percent government support for renewable energy production (S6) represents the best case both for the real economy and credit market's performance, as well as the country's balance of payments with the foreign economies. This scenario displays the lowest unemployment, the highest capital accumulation, and sustained bank endogenous money creation, as a result of higher deposits and loans. These results show the effect of public support to investments in green energy generation and green goods production that lead to (i) higher investments in the domestic economy, and thus a positive dynamics for the production factors (e.g., employment and capital accumulation) and internal aggregate demand (higher households' consumption), and (ii) lower import of fossil fuels from the foreign economy because they are not needed to produce green energy demand. Green subsidies are financed through an increase in general taxation, which is nevertheless lower than in the case of tax rebates to mining company, and thus has less distributive effects on economic agents (i.e, taxpayers).

“ ... public support for green investments has a positive spillover on human capital accumulation in the economy, as well as on workers' wages, increasing their disposable income and wealth.”

In all the greening scenarios (S4, S5 and S6), bank's performance improves as a consequence of (i) new demand for credit in the green sector as a result of government support, and determines an increase in bank's balance sheet and endogenous money creation, and (ii) lower import of raw materials and energy from the rest of the world (because energy is generated out of renewable sources through solar panels). It is worth noticing that under S6 (the 15 percent green subsidies) not only unemployment decreases but also

workers' wages in the green sector increase because the green sector employs mostly higher skilled workers as the sector is R&D intensive, particularly at the beginning of the production process. High skilled workers get a higher salary in comparison to workers in the brown sectors due to the innovation-intensive characteristics of their jobs. Therefore, public support for green investments has a positive spillover on human capital accumulation in the economy, as well as on workers' wages, increasing their disposable income and wealth.

Table 3 sums up the results and shows the values of relevant economic variables related to the six policy scenarios considered. The values reported are averaged over 120 simulation time steps, except for the unemployment rate where the maximum value over the period is reported.

TABLE 3: EIRIN Model's Results

	Scenario					
	S1	S2	S3	S4	S5	S6
Renewable production capacity growth rate (%)	0.658	0.668	0.661	0.758	0.88	1.191
Oil import expenses to GDP (%)	6.62	6.61	6.59	6.47	6.34	6.07
Raw material import expenses to GDP (%)	0.073	0.072	0.072	0.072	0.071	0.07
Unemployment rate (%), maximum	4.09	3.94	2.56	1.33	0	0
Real wage	1.136	1.136	1.136	1.138	1.14	1.155
Capital accumulation in the consumption goods sector, growth rate (%)	0.081	0.086	0.096	0.112	0.166	0.229
Bank credit growth rate (%)	0.354	0.352	0.366	0.399	0.46	0.606
Bank liquidity growth rate (%)	-0.121	-0.108	-0.095	-0.089	-0.083	-0.075
Government surplus (+)/deficit (-) to GDP (%)	2.1	2.08	2.04	1.96	2.34	2.67

Conclusions

Prioritizing the phase out of fossil fuel subsidies under the TTIP may contribute to not only a reduction in carbon dioxide emissions but also to decreased market distortions, with positive effects on growth and employment in a period of slowing economic growth. Moreover, phasing out fossil fuel subsidies could contribute to an increased financial stability as a result of the economy's decoupling from fossil fuels. High price volatility of fossil fuel commodities experienced in 2015, and the potential risk of carbon stranded assets (e.g., closed coal plants) as a result of the fast introduction of climate mitigation policies, could contribute to decreased mining companies' assets values and thus negatively impact bank's portfolios and balance sheets.

The introduction of support for cleaner energy, on the other hand, contributes to improved performance of the real economy (e.g., lower unemployment, higher capital accumulation and internal demand) and healthier bank balance sheets, and to the external balance of payments. In light of these results, trade agreements that decrease NTBs by relaxing environmental regulation and thus promoting a further liberalization of fossil fuels (such as shale oil), would not only contribute to increased emissions but would also have a negative impact on the performance of the real economy and the credit sector, thus counteracting the potential benefits of trade liberalization.

References

- Batten, S., Sowerbutts R., Tanaka M. (2016). "Let's talk about the weather: the impact of climate change on central banks." *Bank of England's Staff Working Paper* No. 603, London (UK).
- Battiston, S., Mandel, A., Monasterolo, I., Schuetze, F., G., Visentin (2016). A Climate Stress-Test of the EU Financial System. Available at SSRN <https://ssrn.com/abstract=2726076>
- Caldecott, B., McDaniels, J. (2014). "Stranded Generation Assets." Working Paper, Smith School of Enterprise and the Environment, University of Oxford, Oxford.
- Capaldo, J. (2014). TTIP: European Disintegration, Unemployment and Instability. Global Development and Environment Institute (GDAE) Working Paper, 14-03. Tufts University, Boston.
- Capaldo, J., Izurieta, A. (2016). "Trading Down: Unemployment, Inequality and Other Risks of the Trans-Pacific Partnership Agreement." *GDAE Working Paper*, 16-01. Tufts University, Boston MA.
- CEPR (2013). *Reducing Transatlantic Barriers to Trade and Investment: An Economic Assessment*, Report prepared by Francois, J., M. Manchin, H. Norberg, O. Pindyuk and P. Tomberger for the European Commission.
- Contestabile, M. (2015). Climate-trade policy nexus. *Nature Climate Change*, Research Highlights, vol. 5, January.
- European Commission (2013). EC Staff Working Document, Impact Assessment on the Future of EU-US Trade Relations. Available at <http://tinyurl.com/Impact-Assessment-Report>
- European Systemic Risk Board (2016). "Too late, too sudden: Transition to a low carbon economy and systemic risk," Reports of the ESRB Advisory Scientific Committee, No. 6, February. Available at <http://tinyurl.com/ESRB-No-6>
- IPCC (2014). *Climate Change 2014: Synthesis Report*. Contribution of Working Groups I, II and III to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change, Core Writing Team, R.K. Pachauri and L.A. Meyer. doi:10.1017/CBO9781107415324.004
- Lagarde, C., Kim, J.Y. (2015). The path to carbon pricing. Project Syndicate. Available at <http://tinyurl.com/Carbon-Pricing-Path>
- Lazarus, M. and Tempest, K. (2014). "Fossil Fuel Supply, Green Growth, and Unburnable Carbon." SEI Discussion Brief. Stockholm Environment Institute, Seattle, WA. <http://tinyurl.com/Fossil-Fuel-Green>
- Le Quéré, C., Moriarty, R., Andrew, R.M., Peters, G.P., Ciais, P., Friedlingstein, P., Jones, S.D., Sitch, S., Tans, P., Arneeth, A. and Boden, T.A. et al. (2015). Global carbon budget 2014. *Earth System Science Data*, 7:47-85
- Mazzucato, M. (2015). "The green entrepreneurial State." *SPRU Working Paper Series*, (28). University of Sussex, Science Policy Research Unit
- Monasterolo, I., Raberto, M. (2016). A Hybrid System Dynamics — Agent Based Model to Assess the Role of Green Fiscal and Monetary Policies. Available at SSRN: <http://tinyurl.com/Hybrid-System-Dynamics>. Under review at *Ecological Economics*.
- Monasterolo, I., Raberto, M. (2016b). "When the elephant meets the mouse: modeling the impact of fossil fuels and renewable energy subsidies on macro-economic and financial stability." Working Paper. Available at SSRN.
- Porterfield, M.C., Gallagher, K. (2015). TTIP and Climate Change: Low economic benefits, real climate risks. *Investment Treaty News*, December 1. International Institute for Sustainable Development. Available at: <http://tinyurl.com/TTIP-Climate-Change>
- United States National Climate Assessment (2014). Melillo, J.M., Richmond, T.C., Yohe, G.W., Eds., 2014: *Climate Change Impacts in the United States: The Third National Climate Assessment*, U.S. Global Change Research Program. Available at <http://tinyurl.com/NCA-Downloads>
- WTO-UNEP (2009). *Trade and Climate Change*, WTO-UNEP Report, p. xii. Geneva: World Trade Organization. Available at <http://tinyurl.com/WTO-UNEP>

THE COSTS OF REGULATORY “CONVERGENCE”: TRADING AWAY CLIMATE POLICY?

Frank Ackerman

The Transatlantic Trade and Investment Partnership (TTIP), a proposed new trade treaty, is a solution looking for a problem. TTIP is designed to reduce barriers to trade between the United States and the European Union. Yet after years of trade liberalization, any remaining barriers are hard to spot. Tariffs on transatlantic trade average less than three percent in both directions. Europe’s exports to America are worth more than a billion dollars *per day*; America’s exports to Europe are almost as large (a billion dollars every 32 hours). Vast quantities of machinery, chemicals and other manufactured goods are the leading exports in both directions. Americans are enthusiastic consumers of European wine. Europeans are avid fans of American entertainment. Fashions flow freely in both directions.

“On a list of the world’s pressing problems, the obstacles to U.S.-EU trade would be found near the bottom.”

On a list of the world’s pressing problems, the obstacles to U.S.-EU trade would be found near the bottom. Addressing this not-so-urgent need, via TTIP, might lead to minor economic gains—while at the same time creating much larger social and environmental losses. Among other risks, the methods proposed to achieve a modest expansion of trade could undermine some of the most promising current efforts to

reduce greenhouse gas (GHG) emissions. The results would include ominous and growing climate damages, an outcome of far greater significance than a tiny boost to incomes from increased trade.

Non-tariff Barriers or Sensible Safeguards?

TTIP advocates maintain that there is still a pressing problem to solve: the supposed scourge of “non-tariff barriers” to trade. Regulations on both sides are said to create needless obstacles that limit the growth of international trade. TTIP would tackle this problem by promoting regulatory convergence between Europe and America. If the rules of domestic commerce were the same on both sides, exports might flow even more freely than at present. According to the best-publicized economic analyses, both Europeans and Americans would have slightly higher average incomes as a result.

This story evokes a benign but atypical image of regulations that affect trade. Suppose, for example, that the required engineering specifications for the same product are arbitrarily different in Europe and America, with no major differences in costs, performance, environmental impacts, or safety. Then by all means, let’s have an industry conference and move toward standardization. But such cases can be resolved without a new treaty—and they are rare, in practice.

Most regulations are designed and enacted to address broader social goals. To mention just a few of the areas where European and American standards differ, regulation of chemicals is designed to protect health and safety, as is regulation of food and agriculture. Restrictions on on-line data and information storage have been enacted to protect rights to privacy. And regulations on energy use and GHG emissions are crucial to the efforts to stabilize and protect the world’s climate.

Transatlantic differences in these and other areas of regulation do affect trade—because the two sides have reached different decisions about how to pursue broader objectives. Where free trade

boosters see non-tariff barriers to expanded trade, regulatory agencies and civil society see sensible safeguards of public welfare.

Climate Policy: A Tale of Two Continents

The EU is a world leader in climate policy, taking significant steps toward a sustainable, low-carbon future, and playing a crucial role in advancing international climate negotiations. As of 2012, GHG emissions were 7-13 tonnes of CO₂-equivalent per capita in almost all EU nations—still far above a sustainable level, but distinctly lower than the US, at 20 tonnes per capita (Ackerman, 2016).

“European and American regulations take very different approaches to climate change and energy policy.”

European and American regulations take very different approaches to climate change and energy policy. The American approach includes some promising plans, but lags far behind Europe in ambition and accomplishment. Harmonization or convergence down to American standards in climate and energy regulation would be a setback for Europe—and for the world.

The EU has adopted an overall vision, the Energy Roadmap 2050, calling for nearly complete elimination (80-95 percent reduction) of GHGs by midcentury. More specific near-term targets are expressed in a series of directives and policies, such as the Renewable Energy Directive, the Energy Efficiency Directive, the Clean Air Policy Package—and national policies implementing these EU standards. Although it has stumbled in its early years, the EU Emissions Trading System (EU ETS) sets a cap for GHG emissions from regulated sectors.

European policies have had impressive results. As of 2013, renewable energy represented 25 percent of all EU electricity generation. Biomass, renewable waste, and hydropower are large parts of the renewable energy supply, but wind and solar power are expanding rapidly. The share of EU electricity coming from wind and solar power rose from 1.8 percent in 2004 to 10.2 percent in 2013. Much of the growth of renewable energy in the EU has come from feed-in tariffs for renewable electricity generation, guaranteeing fixed rates—above the market rate for electricity—for a number of years.

In contrast, the U.S. is generally stricter than the EU in regulation of common (non-carbon) air pollutants. The recent American success in limiting GHG emissions, stemming largely from a decline in coal use, is due to the combination of cheap gas, the expansion of renewable energy, and regulations that require costly pollution controls at coal plants.

In terms of energy efficiency, national policy in the U.S. is largely confined to standards for vehicle fuel efficiency (comparable to or slightly weaker than EU rules) and appliance efficiency. Other aspects of energy efficiency, like much of energy policy in general, are left to the states within the US.

A few U.S. states match or exceed European standards. California’s climate and energy policies might not seem out of place in Europe, and the price of carbon allowances has recently been higher in California than in the EU ETS. But many states, including some with extraordinary wind and solar resources, have done little or nothing about renewables, energy efficiency or climate change. For the country as a whole, renewables are perhaps half as important as in Europe: all forms of renewable energy, including hydropower and biomass, represented just under 13 percent of U.S. electricity generation in 2013; wind and solar power grew from 0.4 percent of U.S. electricity in 2004 to 4.4 percent in 2013.

Moreover, the path forward for U.S. climate policy is frequently blocked by partisan political conflict. Climate science denial remains surprisingly powerful, and climate policy denial is ascendant in

Congress. The Obama administration's major climate initiative, the Clean Power Plan, sets relatively undemanding state targets and relies on opaque and exotically complex mechanisms (designed to avoid the need for a Congressional vote, which would mean certain death for the plan). Despite these efforts to escape controversy, implementation of the Clean Power Plan has been delayed at least for years, if not forever, by a Supreme Court decision.

“... convergence to American climate standards would mean hitching Europe's wagon to a grumbling and retrograde star.”

Thus, convergence to American climate standards would mean hitching Europe's wagon to a grumbling and retrograde star. Today it is Europe, not the United States, which plays the leading role in climate negotiations and inspires others to catch up to its example. Loss of that leadership would reverberate far beyond the parties to TTIP.

Climate Losses I: Cooperating Downward

A variety of mechanisms have been proposed to eliminate the supposed non-tariff barriers to trade and promote regulatory convergence. The gentlest, or at least vaguest, proposal is for “regulatory cooperation”, allowing each side to participate in the development of the other side's rules. In practice, regulatory cooperation means that businesses from both sides should be given ample opportunities to intervene in, comment on and lobby about both sides' regulations, from the initial drafting stages through evaluation and adoption.

The potential impact of regulatory cooperation can be seen in the fate of the EU's proposed regulation of carbon emissions from air travel (Corporate Europe Observatory, 2016). Recognizing the rapid growth of carbon emissions from air travel, the EU decided in 2013 to extend the EU ETS to airlines flying to, from or within Europe. This would have brought the airlines within the carbon trading system, requiring them to hold or buy carbon allowances equal to their emissions, as is the case with electric utilities and other major industries subject to the EU ETS. Airlines would have been exposed to the market incentive of a price (though currently a low price) on carbon emissions.

Opposition to the EU proposal from the US, China and other countries was overwhelming; the U.S. passed a law protecting its airlines from having to pay carbon fees. The EU quickly retreated, requiring participation in the EU ETS only for flights that are entirely within Europe. For international flights to and from Europe, there was only a face-saving agreement to wait and see whether the International Civil Aviation Organization will establish a global market-based scheme for reducing airline carbon emissions by 2020.

EU proposals for TTIP would institutionalize a higher level of regulatory cooperation for the future, creating a mechanism to narrow the gap between European and American regulations. As the case of air travel regulations suggests, the likely outcome is to loosen the standards for GHG emissions to the lowest common denominator.

Another European retreat on climate protection resulted from the process of transatlantic negotiation on trade liberalization. Once upon a time, the EU planned to regulate the use of tar sands oil, based on its higher lifecycle carbon emissions. But trade negotiations overwhelmed and reversed this proposal (Friends of the Earth Europe, 2014).

The regulation at issue was the EU Fuel Quality Directive (FQD). Adopted in 2009, the FQD called for reducing the GHG intensity of transport fuels. One proposal for FQD implementation would have counted oil produced from Canadian and Venezuelan tar sands as having greater GHG intensity than conventional oil. Extracting oil from tar sands is a very energy-intensive process, so the lifecycle

emissions for extraction and use of oil are greater for tar sands than for conventional oil wells. A complete accounting of the lifecycle emissions from tar sands oil would make it difficult to use such oil and still comply with the FQD.

The proposal was immediately met with strong opposition from Canada, the US, and major oil company lobbyists. Debate over the proposal spilled over into the negotiations for the EU-Canada free trade agreement, threatening to derail the entire agreement. It has also appeared throughout the TTIP negotiations, with U.S. representatives repeatedly pushing for formulas that, in effect, treat all crude oil as having the same emissions intensity, regardless of how it is produced. Ultimately the EU proposal was withdrawn, due to the international lobbying effort, combined with concerns about dependence on Russia and a geopolitical preference for Canadian oil.

In this area, TTIP negotiations have already contributed to a retreat from earlier European climate proposals. The EU had decided, acting democratically and within the law, to discourage the use of some of the world's dirtiest oil supplies. The oil industry and its North American allies used the TTIP negotiations to reverse the EU decision. The damage is not only to the environment, but to democracy as well.

Climate Losses II: Coercing Convergence

The prospects for adoption of TTIP are uncertain, with strong opposition in several European countries and new confusion surrounding Brexit. Nonetheless, if TTIP is eventually adopted, it will include mechanisms for enforcing regulatory convergence.

European negotiators have asserted the right of each side to regulate to the level it finds appropriate, but this principle could lead to recognition of both sides' regulations as equally legitimate. If the weaker side's regulations appeared to lower costs or ease impacts on affected enterprises, these short-run considerations could obscure the long-term benefits of regulation—leading to political demands for downward harmonization.

Even stricter and more coercive mechanisms are typically involved. Proposals for TTIP generally include investor-state dispute settlement (ISDS) systems, similar to those in many recent trade agreements. ISDS allows private investors to sue for damages that they attribute to other countries' laws, regulations and administrative decisions. A special-purpose tribunal, outside the legal and political systems of the participating countries, has final authority to assess monetary penalties based on national or subnational policies that are considered barriers to trade. Such penalties typically force governments to reverse the policies in question.

“*The potential for ISDS to clash with national energy and climate policies is not just an abstract possibility. It has already happened under ISDS clauses in existing trade treaties.*”

Responding to widespread opposition to ISDS, a modified EU proposal would replace ISDS with a new Investment Court System (ICS). The ICS would establish permanent tribunals, rather than the ad hoc panels assembled for each case under many ISDS agreements; there would be improved transparency, a right of appeal to a new appeals court, and shorter timelines for decisions.

Success of the ICS proposal, however, is far from guaranteed, as it has come under attack both for doing too much and too little. U.S. negotiators and some business lobbies have been cool to the proposal, claiming that it tilts too far toward states and against investors. On the other hand, some NGOs have claimed that ICS is merely a new name for ISDS, since it still creates new trade courts and trade law that could overrule national sovereignty and reverse democratically adopted decisions.

The potential for ISDS to clash with national energy and climate policies is not just an abstract possibility. It has already happened under ISDS clauses in existing trade treaties.

- The Swedish power company Vattenfall has demanded compensation from Germany twice, for the regulation of a German coal plant, and for the decommissioning of two German nuclear power plants after the Fukushima accident. The first case resulted in a negotiated weakening of water pollution standards for the coal plant. The second case, in which Vattenfall is demanding €3.7 billion (more than US\$4 billion) is still pending.
- When the province of Quebec imposed a moratorium on fracking under the St. Lawrence River in order to allow time to study the health and environmental impacts of fracking, Lone Pine Resources filed an ISDS suit against Canada (still pending). Lone Pine is the U.S. subsidiary of a Canadian oil and gas firm.
- After the Obama administration rejected the proposed Keystone XL oil pipeline, TransCanada, the pipeline developer, demanded more than \$15 billion in compensation from the U.S. TransCanada claimed that the U.S. government knew the pipeline would have no significant impact on climate change, but “was **perceived** to be bad for the environment, and the Administration had to appease those in the international community who held that (false) belief” (TransCanada, 2016, 3). This case, too, is still pending.

In these and other ISDS cases, foreign corporations or individual investors assert the right to review and reject the decisions of democratically elected national governments. ISDS first appeared in a 1959 treaty between Germany and Pakistan; in its early days, it was designed to reassure multinational corporations that their investments would not be expropriated in developing countries with weak legal traditions. Over the years it has expanded into a nearly universal right for investors to challenge governments. In the examples above, in which Swedish, American and Canadian companies are suing Germany, Canada, and the United States, the rule of law is well established and investments are securely protected against expropriation. Governments, however, are not protected from foreign investors who prefer to reverse public policies.

How Much Is at Risk?

Under TTIP, American and European corporations could challenge the other side’s policies. American firms could challenge any introduction of or increase in European feed-in tariffs; European firms could challenge the most ambitious American state regulations, such as those in California. American gas producers could sue European countries that have restricted or banned fracking.

In several cases, there have already been American objections to EU climate and energy regulations—and some EU counter-charges—which suggest the potential for ISDS cases under TTIP:

- The EU’s Renewable Energy Directive calls for 20 percent of EU energy consumption to come from renewable sources by 2020, with higher targets under discussion for 2030 and beyond. The U.S. Trade Representative (2014, 74) has objected to the EU Renewable Energy Directive as a “technical barrier to trade” due to a definition of renewable fuels that restricts U.S. exports of soybeans for use as a biofuel feedstock. The EU, meanwhile, has levied anti-dumping penalties on biodiesel and bioethanol exports from the U.S. and other countries, claiming that they represent unfair competition with European biofuel producers (Stearns, 2013; Camino and Haufbauer, 2014).

- Climate-related standards for appliances include EU restrictions on the use of fluorinated GHGs such as hydrofluorocarbons in refrigeration, air conditioning and other applications (European Commission, 2016). The U.S. Trade Representative (2014, 67) has identified EU regulation of fluorinated GHGs as a “technical barrier to trade,” since some U.S. appliance manufacturers will be unable to comply with these rules, noting that “the U.S. appliance industry was extremely concerned with the lack of its ability to participate in the development of [the EU] proposal beyond a single public meeting.”

The EU has stricter standards, and more to lose from downward harmonization, in most areas of climate and energy policy. But the reverse may be true in the important cases of air pollution standards for power plants and motor vehicles. It is all too possible to imagine European firms bringing ISDS challenges to American standards for particulates, sulfur, and lead emissions as unfair barriers to trade.

“The EU has stricter standards, and more to lose from downward harmonization, in most areas of climate and energy policy.”

There is no way to put a monetary value on the total benefits of regulations at risk under TTIP. I have estimated the value of three types of benefits of the EU’s current level of renewable energy: the reduction in GHG emissions and future climate damages; the reduction in harmful health impacts of coal combustion; and the social benefits of increased employment. The total comes to €35–63 billion per year (Ackerman, 2016). This, combined with my separate estimates for the benefits of REACH, the EU chemicals policy, adds up to almost as much as the claimed economic benefits to Europe of TTIP. That is, just two areas of regulations have identifiable benefits worth almost as much as the gains projected from TTIP. Giving up these and other valuable regulations in exchange for a modest increment in income would leave Europeans worse, not better off.

Conclusion: Democracy Does Not Proceed in Lockstep

Regulations reduce the profits of some business enterprises; this is inevitable when society decides to redirect the market in healthier directions. Limits on smoking reduce the profits of tobacco companies; should America have waited for Europe’s slower progress on tobacco control? European limits on gun ownership reduce the profits of gun companies; should Europe have waited until all of America is ready to adopt similar rules for its well-armed citizens? These are not “barriers to trade” or reasons to subject more people to lung cancer or weapons injuries. Rather, they are profound statements about the ways in which a democratic society has decided to put people ahead of profits.

The path forward in climate and energy policy is not quite as obvious as in tobacco and guns. But it is equally important to debate and decide on the appropriate, socially necessary limits on unfettered market activity. The discussion will not proceed in lockstep in different countries and continents. This is a reason to keep talking, and challenging each other to do better—not to undo each other’s progress and undermine democracy in the narrow pursuit of expanded trade.

References

- Ackerman, F. (2016). "Europe's Regulations at Risk: The Environmental Costs of the TTIP," Boston University, Global Economic Governance Initiative. Available at <http://tinyurl.com/Europe-Regulation>
- Cimino, C. and Hufbauer, G. (2014). "Trade Remedies Targeting the Renewable Energy Sector," report of Green Economy and Trade, Ad Hoc Expert Group 2, Geneva, April 3-4. Available at <http://tinyurl.com/Adhoc-Group>
- Corporate Europe Observatory (2016). *Dangerous regulatory duet: How transatlantic regulatory cooperation under TTIP will allow bureaucrats and big business to attack the public interest*, Corporate Europe Observatory and Lobby Control. Available at <http://tinyurl.com/Regulatory-Duet>
- European Commission (2016). "EU legislation to control F-gases," Retrieved from European Commission website at http://ec.europa.eu/clima/policies/f-gas/legislation/index_en.htm
- Friends of the Earth Europe (2014). *Dirty Deals: How trade talks threaten to undermine EU climate policies and bring tar sands to Europe*. Available at <http://tinyurl.com/Dirty-Deals>
- Stearns, J. (2013). "U.S. Bioethanol Makers Face 5-Year EU Anti-Dumping Tariff," *Bloomberg Business* online, February 28. Retrieved from <http://tinyurl.com/US-Bioethanol>
- TransCanada (2016, January 6). Notice of Intent to Submit a Claim to Arbitration under Chapter 11 of the North American Free Trade Agreement. Emphasis in original. Available at <http://tinyurl.com/TransCanada-Corp>
- U.S. Trade Representative (2014). *2014 Report on Technical Barriers to Trade*. Available at <http://tinyurl.com/Trade-Barrier-Report>

RECONCILING TRADE RULES AND CLIMATE POLICY

Matthew C. Porterfield

Introduction

The relationship between international trade rules and climate change has emerged as a major area of controversy in the debate over the Trans-Pacific Partnership (TPP) and the Trans-Atlantic Trade and Investment Partnership (TTIP). Civil society groups have argued that these proposed trade agreements should be rejected because they would undermine the ability of governments to implement climate policies in a variety of ways, including most notably the expansion of access for fossil fuel corporations to investor-state dispute settlement (ISDS) procedures.

Yet even if the TPP and TTIP are not approved, international trade and investment agreements will play a significant role in climate policy. The rules of the World Trade Organization (WTO) have already been invoked in successful challenges to renewable energy policies. Moreover, the controversial ISDS mechanism—already available under the more than 3,000 existing treaties—is being used in disputes involving a variety of policies relevant to climate change.

Accordingly, the challenge of reconciling trade and climate policy requires not only avoiding new rules that will restrict climate policy (i.e. “climate-negative” rules) but also addressing the substantial baseline of existing trade rules that are in tension with climate goals. These existing rules include restrictions on supports for renewable energy and on border tax adjustments for carbon pricing programs. Moreover, given the relatively robust adjudication and enforcement mechanisms that are available for trade rules, policymakers should consider whether trade agreements could include provisions that are actually “climate-positive,” including restrictions on fossil fuel subsidies.

Proposed Trade Agreements and Climate Policy

Trade agreements that are currently under negotiation could undermine climate policy in a variety of ways, including the following:

- The “regulatory coherence” chapter of the TPP could make it more difficult to adopt climate measures by encouraging the preparation of “regulatory impact assessments” using cost benefit analysis before adopting new regulations.
- The European Commission (EC) is seeking restrictions on local content requirements in renewable energy programs in the TTIP negotiations (European Commission 2013). These programs may provide necessary local incentives for jurisdictions to enact energy policies that increase aggregate global welfare (Meyer, 2015).
- The EC also intends to use TTIP to obtain “a legally binding commitment to eliminate all existing restrictions on the export of natural gas in trade between [the United States and the European Union] as of the date of entry into force of the Agreement” (European Commission 2016). Promoting the export of liquefied natural gas (LNG) from the United States to Europe could result in increased greenhouse gas (GHG) emissions. Due to the energy consumed in the process of liquefying, transporting and regasifying the gas, exported LNG is approximately 15 percent more carbon intensive than gas consumed domestically. In addition, increased exports

of natural gas could result in expanded fracking to meet the new demand, which could cause more releases of methane—a particularly powerful GHG—into the atmosphere (Morgan and Bradbury, 2013).

- Language that has been proposed in the negotiations on the Trade in Services Agreement (TiSA) would impose restrictions on regulations affecting energy related services “irrespective of the energy source dealt with, technology used, [or] whether the energy source is renewable or non-renewable” (Iceland and Norway, 2014). Prohibiting governments from distinguishing between renewable and non-renewable energy when regulating services could conflict with a wide range of policies that are designed to promote renewable energy (Menotti, 2016).

The area of potential conflict between pending trade agreements and climate policy that has received the most attention, however, is the expansion of access to investor-state dispute settlement procedures that would occur under the TPP and the TTIP. Critics point to investor-state disputes under existing agreements as evidence that the significant expansion of ISDS under the TPP and TTIP will undermine climate policies (Inside US Trade, 2016).

The Canadian corporation TransCanada, for example, has brought a claim under the investment chapter of the North American Free Trade Agreement (NAFTA) seeking \$15 billion in compensation from the United States based on the rejection of its application for a permit to construct the Keystone Pipeline. The pipeline would have transported high carbon-intensity oil from Alberta, Canada to refineries in Oklahoma and Texas.ⁱ In rejecting the permit application, the U.S. State Department stressed that “a decision to approve this proposed Project would undermine U.S. objectives on climate change; it could call into question internationally the broader efforts of the United States to transition to less-polluting forms of energy and would raise doubts about the U.S. resolve to do so” (Department of State, 2015). In another claim brought under NAFTA, the U.S. corporation Lone Pine Inc. is challenging Quebec’s moratorium on hydraulic fracturing, which has prevented Lone Pine from extracting oil and gas from beneath the St. Lawrence River.ⁱⁱ The TTP and the TTIP could result in numerous similar claims targeting regulation of the oil and gas industry by significantly increasing the number of fossil fuel companies that could use the ISDS mechanism against participating countries (Beachey, 2016). Additional claims could be brought under the bilateral investment treaties (BITs) that the United States is currently negotiating with several countries including China and India.

Existing Trade Agreements and Climate Policy

The *TransCanada* and *Lone Pine* disputes illustrate the need to address the implications of trade and investment rules for climate policy under existing agreements regardless of whether the TPP and the TTIP are approved. In addition to ISDS, there are a number of other ways in which trade rules are already affecting climate policy. For example, the new limits on localization requirements that the European Union is attempting to secure in the TTIP would merely supplement existing nondiscrimination standards under the WTO that have already been used to challenge renewable energy programs (Cimino and Hufbauer, 2014).

Arguably the most significant potential conflict between trade rules and climate policy is the status of border tax adjustments under the WTO’s General Agreement on Tariffs and Trade (GATT). There is growing support for the view that some form of carbon pricing will be necessary in order to meet climate change goals. According to the International Energy Agency (2015, 135):

“Arguably the most significant potential conflict between trade rules and climate policy is the status of border tax adjustments under the WTO’s General Agreement on Tariffs and Trade (GATT).”

“Carbon pricing will be needed as a feature of the national and international policy response [to climate change]...to reach across the whole of the economy (and particularly to influence private investors) there is no substitute for correct energy pricing, including the creation of expectations of a rising trend in carbon prices.”

Yet carbon-pricing mechanisms imposed at the national level—including both carbon taxes and cap and trade programs—can place domestic manufacturers at a competitive disadvantage that shifts production to other countries, resulting in the “leakage” of the GHG emissions that the measures are intended to reduce. This leakage can be avoided—and political support for the program maintained—through the use of border tax adjustments (BTAs) on competitive imported products (Trachtman, 2016).

There is no consensus, however, on the extent to which such measures are permissible under the GATT. As the Director-General of the WTO acknowledged in 2008, “The problem of WTO compatibility of [border tax adjustments] is terribly complex and cannot be answered in general terms. All serious lawyers having a look at this would answer: ‘It depends’ ” (Lamy, 2008). Opponents of aggressive action on climate change have used the potential for trade conflict to lobby against carbon pricing proposals (Wenk and Westerman, 2009).

Despite the various ways in which existing trade rules could undermine climate policy, there is at least one area where WTO rules could conceivably be applied to support climate goals: the WTO’s Agreement on Subsidies and Countervailing Measures (SCM Agreement) could be used to challenge the massive fossil fuel subsidies that are a major driver of GHG emissions. Globally, fossil fuel subsidies total more than US\$500 billion per year, about quadruple the level of support for renewable energy (International Energy Agency, 2015, 90). The International Energy Agency has estimated that eliminating fossil fuel subsidies could achieve about half of the reductions in GHG emissions that will be necessary to keep global warming below the target of no more than 2 degrees Celsius above pre-industrial levels (Clark, 2012).

The general restrictions on subsidies under the SCM Agreement are, in theory, applicable to fossil fuel supports (Wold et al., 2012, 654–56). The SCM Agreement, however, has not been effective in limiting fossil fuel subsidies. Building a case under the SCM Agreement against a fossil fuel subsidy program would be difficult for a number of reasons, including the complicated and expensive legal and economic analysis that would be required to demonstrate the trade distorting effects of the subsidies (Wold et al., 2012, 640–42; Meyer, 2013).

Reconciling Trade Rules and Climate Policy

The potential for conflict between the TPP and the TTIP and climate policy could be addressed either by rejecting these agreements or by ensuring that they include adequate safeguards for climate measures. More creative approaches, however, will likely be required to address the tension between existing investment and trade agreements—including the WTO agreements—and climate objectives. WTO Members could address the conflicts between WTO rules and climate policy by amending the relevant agreements (Häberli, 2016, 18–23). Yet given the more than decade-long impasse in the current Doha Round of negotiations, it seems improbable in the near term that proposals to ensure the compatibility of trade and climate policy could gain the support of the super-majority of Members that is required to amend WTO rules.ⁱⁱⁱ

A more viable approach for protecting climate policies from challenges under WTO rules may lie in agreements between fewer parties at the bilateral, regional or plurilateral levels, particularly when the relevant parties’ positions on climate policy are more closely aligned to those of the

disparate Members of the WTO. New agreements like the TTIP could include safeguards that would preclude parties to the agreement from bringing any trade or investment challenge—including under WTO rules—to a climate policy of another party.^{iv} Alternatively, parties could enter into separate agreements specifically focused on protecting climate measures from trade challenges.

In addition to preventing the use of trade rules to challenge climate policies, bilateral or regional agreements could also include “climate-positive” provisions, such as explicit restrictions on fossil fuel subsidies.^v The United States and the European Union along with the other members of the G20 (G20 Leaders’ Statement, 2009) have already committed in principle to eliminate inefficient fossil fuel subsidies and could establish an important precedent by agreeing to enforceable limits (Porterfield and Stumberg, 2014). Other nations could similarly give teeth to pledges to phase out fossil fuel subsidies made through the Friends of Fossil Fuel Subsidy Reform and the Asia-Pacific Economic Cooperation (APEC Leaders’ Declaration, 2010) by entering into binding bilateral, regional or plurilateral agreements.

Trade in environmental goods is another area in which trade rules could potentially promote climate objectives. The current negotiations on the Environmental Goods Agreement (EGA) are intended to reduce tariffs on products that are included on a list of environmental goods. The EGA could contribute to climate change mitigation by reducing tariffs on products used in the production of

renewable energy. The effect of the EGA, however, could be relatively small given the already low level of tariffs applied by many of the countries participating in the negotiations (Vassenaar, 2014, 3–4). Critics have also argued that because the EGA negotiations are being conducted without a clear definition of “environmental goods” they could result in the reduction of tariffs on products with negative

climate impacts (Transportation and Environment, 2015, 2–3). Accordingly, any efforts to promote trade in environmental goods will need to be approached carefully to ensure that the climate objectives are not subordinated to other goals.

“ Given that the WTO has ceased to function effectively as a negotiating forum, governments should pursue bilateral, regional or plurilateral agreements that protect climate policies from trade and investment challenges.”

Conclusion

In order to reconcile trade rules and climate policy, governments must address not only proposed agreements such as the TPP and TTIP but also the substantial body of existing “climate-negative” trade and investment rules, including provisions of the WTO agreements. Given that the WTO has ceased to function effectively as a negotiating forum, governments should pursue bilateral, regional or plurilateral agreements that protect climate policies from trade and investment challenges. In addition to protecting climate policies, these agreements could also include climate-positive provisions such as enforceable restrictions on fossil fuel subsidies.

Table 1 illustrates some of the different aspects of the intersection of trade and climate policy—both positive and negative, current and prospective—that should be addressed in order to ensure that trade agreements are consistent with climate objectives.

TABLE 1: Trade and Investment Rules Relevant to Climate Policy

	Proposed Trade and Investment Agreements (TPP, TTIP, TISA, etc.) <i>and potential new provisions (in italics)</i>	Current Trade and Investment Agreements (WTO, FTAs, 3000+ IIAs)
Climate-Negative Provisions	<ul style="list-style-type: none"> ▪ Expanded ISDS ▪ Regulatory coherence requirements ▪ Liberalized LNG trade ▪ Limits on local content requirements for renewable energy ▪ Limits on distinguishing between renewable and non-renewable energy (TISA) 	<ul style="list-style-type: none"> ▪ ISDS provisions (e.g., <i>TransCanada</i> and <i>Lone Pine</i> disputes) ▪ Limits on local content requirements for renewable energy ▪ Limits on BTAs for carbon pricing
Climate-Positive Provisions	<ul style="list-style-type: none"> ▪ Liberalization of trade in environmental goods (EGA) ▪ <i>Explicit limits on fossil fuel subsidies</i> ▪ <i>Protections from challenges to renewable energy programs</i> ▪ <i>Protections for BTAs for carbon pricing</i> 	<ul style="list-style-type: none"> ▪ Restrictions on fossil fuels subsidies under the SCM Agreement(?)

References

- Asia-Pacific Economic Cooperation (APEC) 2010 Leaders' Declaration, Yokohama Japan, November 13. Available at <http://tinyurl.com/APEC-2010>
- Beachy, Ben (2016). *Climate Roadblocks: Looming Trade Deals Threaten Efforts to Keep Fossil Fuels in the Ground*, p. 6. Sierra Club. Available at <http://tinyurl.com/SierraClub-Climate-Roadblocks>
- Clark, Duncan (2012). "Phasing out fossil fuel subsidies 'could provide half of global carbon target,'" *The Guardian*, January 19. Available at <https://www.theguardian.com/>
- Cimino, C. and Hufbauer, G. (2014). "Trade Remedies Targeting the Renewable Energy Sector," p. 19, report of Green Economy and Trade, Ad Hoc Expert Group 2, Geneva, April 3-4. Available at <http://tinyurl.com/Adhoc-Group>
- Department of State (2015). Record Of Decision And National Interest Determination TransCanada Keystone Pipeline, L.P. Application for Presidential Permit, § 6.3 (2015), available at <http://tinyurl.com/Keystone-Pipeline-Record>
- European Commission (2013). *EU - US Trade and Investment Partnership, Raw Materials and Energy, Initial EU Position Paper*, p. 3. Available at <http://tinyurl.com/EU-US-Partnership>
- European Commission, Directorate-General for Trade, TRADE 53/2016, *Note for the Attention of the Trade Policy Committee, EU's proposal for a Chapter on Energy and Raw materials in TTIP* (June 2016), Available at <http://tinyurl.com/TTIP-Energy>
- Friends of Fossil Fuel Subsidy Reform—About FFFSR. Accessed August 2016. Available at <http://ffsr.org/about/>
- G20 Leaders' Statement—The Pittsburgh Summit (2009, September 24-25). Available at <http://tinyurl.com/G20-Pittsburgh-Summit>
- Häberli, Christian (2016). "WTO Rules Can Prevent Climate Change Mitigation for Agriculture," Society of International Economic Law (SIEL), *Fifth Biennial Global Conference Working Paper No. 2016/06*. Available at <http://tinyurl.com/WTO-Climate-Change-Agriculture>
- Iceland and Norway, *Proposal for TISA, Energy Related Services* (2014). Available at <http://tinyurl.com/TISA-Energy-Services>
- Inside U.S. Trade* (2016). "Environmental Groups Ask Congress to Reject TPP, TTIP Over 'Fossil Fuel' Concern," June 09, 2016. Available at [Insidetrade.com](http://insidetrade.com) (subscription).
- International Energy Agency (2015). "Energy and Climate Change," *World Energy Outlook Special Report*, p.135. Available at <http://tinyurl.com/IEAReport-1>
- Lamy, Pascal (2008). Introductory Remarks at the WTO Public Forum, High-Level Panel on the Mutual Supportiveness of Trade, Climate Change and Development Objectives and Policies, September 24, p.2. Available at <http://tinyurl.com/WTO-Public-Forum>
- Menotti, Victor (2016). *TiSA vs Climate Action, Trading Away Energy Democracy*, Public Service International, pp. 7-9. Available at <http://tinyurl.com/PSI-Energy-Democracy>
- Meyer, Timothy (2013). "Energy Subsidies and the World Trade Organization," *American Society of International Law Insights*, vol. 17, issue 22. Available at <http://tinyurl.com/ASIL-Subsidies>
- Meyer, Timothy (2015). "How Local Discrimination Can Promote Global Public Goods," *95 Boston University Law Review* 1939 (2015), Available at <http://tinyurl.com/Global-Goods>
- Morgan, Jennifer and James Bradbury (2013). "What Exporting U.S. Natural Gas Means for the Climate," *World Resources Institute*, May 20. Available at <http://tinyurl.com/US-Natural-Gas>
- Porterfield, Matthew and Robert Stumberg (2014). "Using the Transatlantic Trade and Investment Partnership to Limit Fossil Fuel Subsidies," Discussion Paper for the Greens—European Free Alliance in the European Parliament, January. Available at <http://tinyurl.com/Partnership-Limit-Subsidies>

Trachtman, Joel (2016). "WTO Law Constraints on Border Tax Adjustment and Tax Credit to Reduce the Competitive Effects of Carbon Taxes," Resources for the Future Discussion Paper 16-03. Available at <http://tinyurl.com/WTO-Law-Constraint>

Transport & Environment (2015). "Environmental Goods Agreement," Transport & Environment briefing. Available at <http://tinyurl.com/T-E-Briefing>

Vassenaar, Rene (2014). "Securing Climate Benefits in the Environmental Goods Agreement," *BIORES*, vol. 8, no. 10, International Centre for Trade and Sustainable Development. Available at <http://tinyurl.com/BIORES-EnvGoods>

Wenk, Christopher, and Stefanie Westerman (2009). "The Nexus of Climate Change and Trade: Don't Break the Rules," *International Policy Background*, April, p. 3, U.S. Chamber of Congress. Available at <http://tinyurl.com/USCOC-Climate>

Wold, Chris, Grant Wilson, and Sara Foroshani (2012). "Leveraging Climate Change Benefits Through the World Trade Organization: Are Fossil Fuel Subsidies Actionable?" *43 Georgetown Journal of International Law* 635, pp. 654-56 (discussing various forms of fossil fuel supports that would fall within the SCM Agreement's definition of "subsidy")

Notes

- i See *TransCanada Corp. v. United States*, Request for Arbitration (ICSID) (June 24, 2016), available at <http://www.italaw.com/sites/default/files/case-documents/italaw7407.pdf>.
- ii See *Lone Pine Resources Inc. v. Canada* (UNCITRAL), Notice of Arbitration, (Sept. 6, 2013), available at <http://www.italaw.com/sites/default/files/case-documents/italaw1596.pdf>.
- iii See Agreement Establishing the World Trade Organization, Article X:3, available at http://www.wto.org/english/docs_e/legal_e/04-wto.pdf (amendments generally require support of two-thirds of WTO Members to bind those Members and three-fourths of Members to bind all Members).
- iv The report in *Peru—Additional Duty on Imports of Certain Agricultural Products*, WT/DS457/AB/R (20 July 2015) has raised questions about whether the WTO's Dispute Settlement Body would recognize a provision in a free trade agreement that purports to modify WTO rights between the parties to the FTA. Although a full analysis of *Peru-Additional Duty* is beyond the scope of this paper, it should be noted that regardless of how complex issues regarding the relationship between different international agreements might be resolved, an agreement between two or more WTO Members not to invoke WTO rules to challenge climate measures could help to create a positive political climate for the adoption of such measures. Even unilateral statements by governments pledging not to invoke trade rules in challenges to climate policies could have a beneficial effect. Moreover, an agreement to implement "WTO-plus" rules restricting fossil fuel subsidies would be unlikely to implicate the issues raised in *Peru-Additional Duty*.
- v The restrictions could be modeled on the SCM Agreement's provisions on export and import substitution subsidies (Article 3) and prohibit specified forms of fossil fuel subsidies without requiring the demonstration of trade distorting effects and "specificity" that would be required for a claim under the Agreement's provisions on "actionable" subsidies. See generally Wold et al., pp. 656-693 (discussing legal obstacles to bringing claims against fossil fuel subsidies under the SCM Agreement).

INTERNATIONAL INVESTMENT AGREEMENTS: IMPACTS ON CLIMATE CHANGE POLICIES IN INDIA, CHINA, AND BEYOND

Brooke Skartvedt Gøven and Lise Johnson

Introduction

Mitigating and adapting to climate change will require a fundamental reorientation of our global economy as we move away from fossil fuels and transition to a low carbon and climate-resilient world. This reorientation depends on government actions to help catalyze and channel financial flows in new directions and away from business-as-usual practices.

International investment agreements (IIAs)—treaties that now number over 3,000 and have the objective of promoting and protecting cross-border investment flows—could potentially play a key role in these efforts to scale up and (re)direct investments to meet climate change mitigation and adaptation needs. As presently drafted and interpreted, however, these IIAs represent a missed opportunity to advance climate change solutions and, worse, may even frustrate them. Due to the daunting amount of investment needed for mitigation and adaptation, and the consequent mandate for governments to be strategic in closing financing gaps, it is necessary to critically assess the climate-policy consistency of IIAs and (re)shape them accordingly.

This paper examines these issues. Beginning with a brief overview of IIAs and the challenges and opportunities they can pose for climate change policy generally, this paper then highlights particular challenges and opportunities these agreements pose for climate policy in China and India. When analyzing the relationship between IIAs and climate change, these two countries are important to examine because of their significant modern contributions and vulnerabilities to climate change; their active yet divergent approaches to IIAs; and their dual roles as hosts of considerable inward investment and homes to a large and growing cadre of major outward investors. The issues China and India face in terms of the intersections of climate policy and investment law are not entirely unique to them, but are especially visible. This visibility presents important examples of how current legal frameworks may hinder, but could be harnessed to advance, national action on climate change mitigation and adaptation.

IIAs and Climate Change: The Promise and Perils

IIAs have been signed by most countries throughout the world. They typically require states to provide certain standards of protection to foreign investors including obligations to:

- compensate investors for any expropriation of their property,
- provide investors “fair and equitable treatment” (FET), and
- treat covered foreign investors the same as, or better than, domestic investors or investors from other foreign countries.

A growing minority of IIAs also include restrictions on “performance requirements” such as measures requiring or incentivizing use of local goods and services, and those mandating “technology transfer.”

To enable easy enforcement of these obligations, most IIAs permit foreign investors to directly sue their host-country government for conduct that allegedly breaches the treaty. Such claims can generally be used to challenge actions or omissions of any branch (e.g., executive, legislative, or judicial) and level (e.g., local, state/provincial, or federal/national) of government. These suits, referred to as investor-state dispute settlement (ISDS) cases, take place before an ad hoc panel of three arbitrators who are appointed and paid by the parties to the dispute. The final awards rendered by tribunals are subject to only minimal review and, as compared to judgments issued by national courts, are easier to enforce around the world. These awards carry powerful consequences as they frequently order states to pay foreign investors millions or even billions of dollars.

“ To the extent that IIAs do attempt to attract investment, they rarely target those types of investments that would be most desirable from a sustainability perspective ...”

A key reason many governments have agreed to provide foreign investors these substantive protections and grant them access to ISDS is to attract foreign investment. The rationale is that by signing IIAs, countries provide signals to foreign investors that they are attractive and disciplined sites for foreigners to commit their capital. Studies conducted to date, however, indicate that the mere act of concluding an IIA is no guarantee that investment will come

(Sachs and Sauvant, 2009). Rather, something more from the would-be host state is required such as a market, a low-cost and/or high quality labor force, or natural resources that the investors are seeking to access. Moreover, it is unclear that the legal guarantees provided by IIAs are adequate to compensate for broader and more systemic weaknesses in a host country’s legal and business environment (Sachs and Sauvant, 2009). Thus, despite their objective to promote international investment, IIAs are not sufficient to meet that goal. To the extent that IIAs do attempt to attract investment, they rarely target those types of investments that would be most desirable from a sustainability perspective including, for instance, investment that would facilitate climate change mitigation or adaptation.

Even more problematically, as IIAs have been interpreted by ISDS tribunals, a wide range of government actions and inactions, even those taken in the public interest for purposes such as reducing greenhouse gas (GHG) emissions, can actually run afoul of IIA commitments. When applying the expropriation standard, for instance, ISDS tribunals have required governments to pay foreign investors compensation for legislation, regulation, and court decisions that they consider to have unduly negative impacts on foreign investors’ property rights. The fact that a measure is taken in good faith and for public interest aims is generally not considered to protect governments from having to pay compensation. Similarly, the “fair and equitable treatment” (FET) standard has been interpreted to require governments to compensate investors for conduct that interferes with the investors’ expectations regarding future business plans and profits. Some interpretations of the FET obligation also declare that governments must pay foreign investors compensation for measures that the tribunals deem “arbitrary” or not proportionate to their purpose. As with the expropriation obligation, the fact that a state may be acting in good faith and in the public interest does not shield it from liability under the FET standard.

The range of climate change-related measures consequently vulnerable to challenge under these IIA provisions is extremely broad. On the mitigation side, it could include (but is by no means limited to) actions by governments to:

- discontinue fossil fuel subsidies or to impose carbon taxes on fossil fuel industries;
- include stricter emissions or other environmental standards in new laws or application of existing laws;
- enact policies or practices denying environmental permits for development, transport or use of coal, gas, or petroleum resources;
- institute planned phase-outs of certain energy sources; and
- implement decisions that require or result in stranding of fossil fuel reserves.

On the adaptation side, IIA claims under the expropriation or FET provisions could be used to challenge actions ranging from court decisions requiring fossil-fuel industry players to compensate individuals and communities for causing climate-change related harms, to zoning restrictions limiting future development in flood-prone areas. Indeed, the potential claims are arguably limited only to the imagination of investors and their attorneys; the IIA system lacks rules that prevent investors from or penalize them for making frivolous claims, much less claims that are unsound from a climate policy perspective.

The non-discrimination standards raise similar issues. Under these standards, host governments may treat *different* investors or investments differently, but must treat foreign investors the same as or better than “*like*” domestic investors or investments or those from other countries. As the provisions have been interpreted by at least some ISDS tribunals, conduct that has the *effect* of treating covered foreign investors less favorably than “*like*” domestic or other foreign investors may breach a treaty even in the absence of any discriminatory *intent*.

Foreign-owned companies have used these non-discrimination provisions in IIAs to challenge government decisions to enforce laws against them when similar action had not been taken against other firms, or to deny them permits for extractive industry projects when other projects had been approved. These interpretations not only threaten legitimate government exercises of enforcement and prosecutorial discretion (i.e., decisions by officials regarding how to use often scarce resources to promote compliance with environmental or other laws); they also arguably prevent the strengthening of climate change and other environmental restrictions over time. If, for example, a foreign investor’s application for a coal-fired power plant were rejected based on concerns about the project’s contributions to GHG emissions, the investor could claim it was discriminated against in breach of the IIA if a coal-fired power plant that happened to be owned by a domestic or other foreign investor had previously been proposed and approved before the threats and causes of climate change had been properly understood and incorporated into policy decisions.

Cases interpreting the non-discrimination standards have also successfully challenged government efforts to apply different fiscal regimes to investors involved in producing, using or selling substitutable and non-substitutable products. Ecuador, for example, was held liable for fiscal policies that treated exporters of oil less favorably than “*like*” exporters of flowers; Mexico was held liable for fiscal policies that treated purchasers of high fructose corn syrup differently than purchasers of sugar. These disputes highlight the potential for IIA-based suits against governments for tax regimes that differentiate among producers or users depending on climate-change considerations such as the type of fuel they produce, energy they use, or adaptation planning they have incorporated. Should a coal-fired power plant receive the same tax treatment as a solar-powered facility? Should a car with relatively high GHG emissions benefit from the same subsidies provided for low-emissions vehicles? Should production of a water-intensive crop receive the same fiscal incentives as one appropriate for a drought-prone climate? Are the different groups of power producers, cars, or

crops “like”? These questions are not resolved in the texts of IIAs, and previous ISDS cases provide no guarantee that tribunals will consider or respect the distinctions governments draw in order to advance climate policy aims.

Perhaps the most emblematic sign of the threats IIAs pose to climate policies is *TransCanada v. United States*, which was filed in June 2016 under the North American Free Trade Agreement (NAFTA). In that case, a Canadian firm is seeking USD 15 billion in alleged damages from the

United States for the Obama Administration’s rejection of its proposed Keystone XL pipeline, a project that would transport more than 800,000 barrels of carbon-heavy petroleum each day from Canadian tar sands to refineries in the Gulf Coast. According to the Obama Administration, approving the pipeline would undercut the US’s global leadership in the effort to fight climate change. However, according to TransCanada, the government’s decision expropriated the company’s property, frustrated its expectations, and discriminated against its investment project since previous pipeline projects of investors from the U.S. and other countries had never been rejected on climate-related considerations.

“ ... even if TransCanada were to lose on the merits, its claims illustrate how investors in the fossil fuel industry may use IIAs to discourage or halt climate-friendly policies, or to secure payouts as governments strive to move away from previous, unsustainable policies.”

Even though TransCanada’s case clearly contravenes climate policy and the public interest, it may actually have strong claims according to past interpretations of IIAs. Moreover, even if TransCanada were to lose on the merits, its claims illustrate how investors in the fossil fuel industry may use IIAs to discourage or halt climate-friendly policies, or to secure payouts as governments strive to move away from previous, unsustainable policies.

Another area of tension between IIAs and climate policy objectives arises from IIA restrictions on mandatory and incentive-based “performance requirements.” Performance requirements are tools governments use to require or encourage companies to source their goods and/or services from domestic providers, or to make certain expenditures in the host country such as expenditures on research and development or on employee education and training. While the advantages and disadvantages of these local content tools are hotly debated, they have been and continue to be used by countries around the world to help develop infant industries and to create and deepen the linkages between foreign investment and the domestic economy (albeit with varying degrees of success). These linkages can help ensure that foreign investment provides coveted capital, jobs, technology and know-how. Local content mandates or targets have also been used to make certain policies—such as government programs to subsidize development of renewable energy generation—more politically attractive by helping ensure that those policies produce measurable domestic benefits for stakeholders. A number of IIAs, however, significantly limit the use of these tools.

Similar local content restrictions are embedded in World Trade Organization (WTO) agreements including the Agreement on Trade-Related Investment Measures (TRIMs Agreement) and the Agreement on Subsidies and Countervailing Measures (SCM Agreement). These have been successfully relied upon to challenge efforts by India and Canada to spur domestic development and production of renewable energy technologies while expanding deployment of renewable energy sources. Thus, restrictions on performance requirements are not entirely new in the international law arena. Nevertheless, when included in IIAs, these restrictions on performance requirements often extend beyond the prohibitions enshrined in WTO agreements and can be challenged under the IIAs’ investor-state dispute settlement mechanisms, as well as through the IIAs’ state-to-state dispute settlement mechanisms. By permitting investors to challenge performance requirements directly, the number of potential “enforcers”—and the monetary remedies they can access—can

therefore be significantly greater under IIAs than through the WTO, which only permits states to raise challenges to the policies of another state.

IJA restrictions on performance requirements also typically prohibit governments from imposing “technology transfer” requirements on foreign investors. While the meaning of “technology transfer” is not defined in IIAs, it is susceptible to broad interpretations encompassing flows of “knowledge, experience and equipment amongst different stakeholders such as governments, private sector entities, financial institutions, NGOs and research/educational institutions” (IPCC, 2000). These flows can occur through a host of formal and informal relationships such as licensing agreements, training programs, collaborative research and development, and demonstration.

IJA provisions restricting “technology transfer” requirements are arguably inconsistent with provisions in climate change agreements seeking to promote technology transfers and placing commitments on state parties to help ensure that they occur. Article 4 of the United Nations Framework Convention on Climate Change (UNFCCC), for example, obliges developed country parties to “take all practicable steps to promote, facilitate and finance, as appropriate, the transfer of, or access to, environmentally sound technologies and know-how to other Parties, particularly developing country parties.” Similarly, Article 10 of the Kyoto Protocol states that, “taking into account their common but differentiated responsibilities” all parties must “[c]ooperate in the promotion of effective modalities for the development, application and diffusion of, and take all practicable steps to promote, facilitate and finance, as appropriate, the transfer of, or access to, environmentally sound technologies, know-how, practices and processes pertinent to climate change, in particular to developing countries...”

The arguable tensions between climate change objectives and IJA obligations are made more problematic by the different dispute settlement mechanisms enshrined in the two legal regimes. Comparing the investment regime’s standards and enforcement mechanisms with those of the climate change regime highlights the important differences between the two areas of international law. The UNFCCC does not specifically provide for dispute settlement, and indeed avoids prescribing detailed climate policies and specific measures. Similarly, the Kyoto Protocol sets forth clear obligations to reduce greenhouse gas emissions but leaves it to countries themselves to determine the best way to meet their obligations. The most recent Paris Agreement focuses on the actions and investments necessary to hold the increase in the global average temperature to well below 2 degree C above pre-industrial levels, but does so based on an informal system of mitigation pledges on the part of parties. The climate change regime is thus less prescriptive and non-adjudicatory compared to the strict obligations and enforceability of the investment law regime.



Importantly, IIAs could be more actively enlisted to play a catalytic role in advancing mitigation and adaptation.”

As a result, when a government regulates to meet its commitments under the Paris Agreement, and the regulation is perceived by an investor to violate the government’s obligations under an IJA, the measure may be adjudicated by an ISDS tribunal, according to the standards and requirements of investor protection in the treaty. If IIAs were reliably interpreted as instruments designed and applied

to protect and promote investment as a means of achieving the broader objective of advancing sustainable development, then IJA obligations could be read in line with and supportive of UNFCCC aims. But IIAs have more commonly been interpreted as having the sole purpose of promoting and protecting international investment, regardless of its impact on sustainability objectives, an approach that can result in government liability for breaching broad investor protections irrespective of the legitimacy for doing so from a climate policy perspective.

Importantly, IIAs could be more actively enlisted to play a catalytic role in advancing mitigation and adaptation. There are a number of things the agreements could do in this respect, including incorporating commitments by state parties to:

- cooperate on sharing and disseminating information on opportunities for investment in relevant projects;
- cooperate on development, deployment, and diffusion of relevant technologies;
- taking into account principles of special and differential treatment, provide technical, financial or other assistance to support investment in adaptation and mitigation; this could include such support as capacity building for investment promotion agencies, provision of risk capital and investment guarantees, and assistance in developing relevant technical, managerial and professional expertise.

In addition to such provisions designed to actively support investment in climate-*friendly* investments, IIAs could also be used by state parties to reduce subsidies and other supports to climate-*unfriendly* investments. Some IIAs, for example, bar or limit the use of certain government subsidies and could therefore be specifically used to eliminate fossil fuel subsidies.

Moreover, as is done by some government-sponsored political risk insurance providers, IIAs could narrow their scope so as to deny protection to investments that are inconsistent with climate policy objectives. In contrast to current practices in which IIAs provide *all* types of foreign-owned investments what is, in effect, free political risk insurance, a climate-consistent approach would deny coverage for projects such as new coal mines and real estate projects in high-risk coastal or flood prone zones. Using this approach, IIAs could seek to encourage investment in climate friendly projects by providing qualifying investors protections against real government abuse, while ensuring that investments exacerbating climate change challenges would not be similarly covered and incentivized.

China and India: Past Practices and Future Options

For countries such as China and India, for whom both the effects of climate change and the contributions of their industries are particularly notable, the challenges and opportunities presented by IIAs are heightened. Data from 2012 show that these two countries together accounted for roughly one-third of the world's annual greenhouse gas (GHG) emissions (World Resources

Institute, 2014). Given their development needs, large and ecologically diverse territories, and sizeable populations, these countries' efforts to reduce climate risks will be complex, and likely expensive, tasks (Nadin, et al., eds. 2015).

Due to concerns about current levels of emissions, potential costs of climate change, and opportunities to become leading producers of environmentally sound goods and services, both India and China have emphasized the importance of developing

and adopting GHG reduction and climate-change adaptation policies and have taken steps to do so. Each country's "Intended Nationally Determined Contribution" (INDC), developed in connection with the Paris Agreement, lists various components of their respective climate-friendly plans. In these texts, initiatives aiming to (re)direct private sector activity figure prominently.

IIAs pose risks to these actions. China and India have both indicated that they will pursue their climate policy objectives through measures such as imposition of taxes, removals of subsidies, and

“ For countries such as China and India, for whom both the effects of climate change and the contributions of their industries are particularly notable, the challenges and opportunities presented by IIAs are heightened.”

adoption of new zoning restrictions. Notably, in other countries and similar contexts, such actions have given rise to ISDS claims. India and China are therefore likewise vulnerable as each country boasts a significant amount of foreign investment that could be affected by these measures and has signed a large number of IIAs (China roughly 150 and India roughly 95) under which investors could potentially bring challenges.

Not all of these IIAs, however, are the same (Berger, 2008). Up until the late 1990s, China's IIAs provided only a relatively narrow set of protections to investors and limited access to ISDS. Yet over the past two decades, China has embarked on a program of negotiating treaties with stronger investor protections (though it still appears largely resistant to including restrictions on performance requirements), and greater access to ISDS. These shifts reflect China's concern about the treatment of its growing number of investors abroad.

In comparison, India's IIAs have tended to provide broader investor protections and greater means to enforce them through ISDS. After being hit with a number of ISDS claims, however, India adopted a different approach. In 2015, it adopted a new "model" text that, as compared to its previous IIA commitments, narrows investor protections, limits ISDS, and contains a number of provisions recognizing and protecting states' rights to regulate in different policy areas. Despite the preparation of this new model, it is still unclear as of mid-2016 whether India will actually conclude IIAs incorporating the model's more defensive approach. Moreover, irrespective of what India does with its future treaties, the long lives (often multiple decades) and automatic renewal provisions of many IIAs mean that India will be subject to broad obligations under pre-2015 agreements for years to come. Even if India were to terminate those IIAs, their "survival clauses" typically provide that state parties will continue to be bound by the treaties' obligations for a period of 10-20 years. China and India, therefore, will likely be vulnerable to ISDS claims and liability for at least the coming decades, which is the prime time for climate action.

In terms of the opportunities China's and India's IIAs present for advancing climate policy objectives, some of the provisions suggested above by which state parties to an IIA commit to cooperate on investment in sustainable development can already be found in a few agreements concluded by China (Johnson and Sachs, 2015). Yet while promising, both China's and India's IIAs could do much more in terms of specifying relevant commitments and establishing institutions or mechanisms to ensure compliance.

On the issue of excluding coverage for investments that are inconsistent with climate policy objectives, India's model IIA contains analogous provisions denying IIA protections for certain projects based on investor misconduct. Denying coverage based on climate change risks and vulnerabilities is similar, but merely extends the grounds for exclusion. Nevertheless, neither India nor China presently have language in their IIAs that would preclude coverage for projects that exacerbate climate change challenges.

The Future of the Investment Regime

There are fundamental questions about whether IIAs permit appropriate policy space for action on climate change or deter or undermine appropriate government measures. Moreover, there is concern that IIAs are agnostic toward the types of investment they cover, protecting investments irrespective of whether they exacerbate or help ameliorate mitigation and adaptation challenges. Consequently, not only are IIAs missing an opportunity to catalyze badly needed investment in support of climate action, they may also be facilitating—if not encouraging—entrenchment of unsustainable policies and practices.

These issues are especially salient for China and India as countries with significant numbers of IIAs and stocks of foreign investment, as well as a real interest in the climate agenda and important national plans to address climate change. In recent years, both countries have been altering their approaches toward IIAs; and there are some areas in which those new approaches can help reduce exposure to ISDS claims for mitigation or adaptation measures and/or help promote climate friendly investments. Nevertheless, much broader overhauls of IIAs are needed, both for those two countries and the parties to the thousands of other IIAs that exist or that are being negotiated.

References

Berger, A. (2008). China's new bilateral investment treaty programme: Substance, rationale and implications for international investment law making. Paper prepared for the American Society of International Law International Economic Law Interest Group 2008 Biennial Conference, *The Politics of International Economic Law: The Next Four Years*. Washington, D.C. Retrieved from <http://tinyurl.com/China-BITs> (accessed Aug. 24, 2016).

Intergovernmental Panel on Climate Change. (2000). *Methodological and technological issues in technology transfer*. Retrieved from <http://tinyurl.com/IPCC-Tech> (accessed Aug. 24, 2016).

Johnson, L. and Sachs L. E. (2015). International investment agreements, 2013: A review of trends and new approaches. In Bjorklund, A. (Ed.), *Yearbook on International Investment Law and Policy, 2013-2014* (25-68). New York, NY: Oxford University Press.

Kyoto Protocol to the United Nations Convention on Climate Change, Dec. 11, 1997, 2303 United Nations Treaty Series. 148.

Nadin, R., Opitz-Stapleton, S., and Yinlong, X. (Eds.). (2015). *Climate Risk and Resilience in China*. London and New York: Routledge.

Paris Agreement to the United Nations Framework Convention on Climate Change, April 26, 2016, C.N.63.2016. TREATIES-XXVII.7.d. (U.N. Depository Notification).

Sauvant, Karl P. and Sachs, L. E. (Eds.). (2009). *The Effect of Treaties on Foreign Direct Investment*. New York, NY: Oxford University Press.

United Nations Framework Convention on Climate Change, Sept.5, 1992, 1771. United Nations Treaty Series. 107.

World Resources Institute. (2014, Nov. 25). Six graphs explain the world's top ten emitters. Retrieved from <http://tinyurl.com/WRI-6-Graphs> (accessed July 31, 2016).

REDEFINING EGS TO SOLVE SEVERE CLIMATE AND OTHER GLOBAL ENVIRONMENTAL PROBLEMS

Tao Hu

The December 2015 Paris Agreement showcases humanity's great efforts to tackle the problem of climate change. However, these efforts current are not considered in international trade pacts. World Trade Organization (WTO) rules do not always support actions taken to solve severe climate and other global environmental problems. So far, the WTO has no agreement on so called Environmental Goods and Services (EGS) that might have potential legal conflicts with United Nations Framework Convention on Climate Change (UNFCCC) and other Multilateral Environmental Agreements (MEAs). To address the problem of climate change's impacts on the global environment, climate change must become a consideration in the on-going efforts to negotiate agreement on environmental goods and services at the WTO. So far, WTO has no clear definition of EGS and the current coverage of EGS is unable to meet the demand of environmental quality, especially for global environmental and indoor environmental services. Thus, a new definition must be derived.

This short policy paper aims to redefine environmental goods and services for the purpose of solving global environmental problems—particularly climate change—and to focus on building the coherence between WTO and MEA rules. Furthermore, this paper seeks to use this new definition to discuss metrics that would constitute a climate-friendly good in an Environmental Goods Agreement (EGA) and environmental service in WTO that can be applied to promote climate goals. Moving in this direction would help to reinforce the globally supported efforts outlined in the Paris climate agreement instead of running counter to it.

Background

The WTO, authorized in 2001 by the Doha Ministerial Meeting, began to negotiate Doha Development Agenda (DDA) paragraphs 31.1, 31.2 and 31.3. Among all of the negotiation topics, the liberalization of environmental goods and services (DDA31.3) is the most important. However, the WTO has so far been unable to derive a clear descriptive definition of EGS. Despite this, a few WTO members who are involved in the plurilateral negotiations on the Environmental Goods Agreement (EGA) have been able to construct an environmental goods list.

The previous EGS negotiations under WTO's Committee on Trade and Environment (CTE) and the current EGA negotiations are wracked with three major problems:

- First, the negotiations are really driven by trade interests but should be driven by environmental demands. Often, the environment is used by trade negotiators as an excuse to promote exporting during the negotiation. Although the global environment is threaded with unsustainable trade, many efforts have yet to be made on how to use trade measures to solve or mitigate global environmental problems, especially climate change.
- Second, the negotiations are also driven by national interests but should be driven by global interests—there are no representatives of global environmental interests among existing proposals in the negotiations. It is necessary to have global EGS to improve the global

environment. A new global mechanism is needed to allow for the creation of an active role in protecting the global environment and serve as a representative of global public goods and services. WTO itself should think about global interests rather than national interests.

- Third and finally, the negotiations lack coherence with MEAs. During negotiations, MEAs and EGS are not mutually supportive and even conflict in some matters. Many energy efficient, renewable energy and climate-friendly products are not on the proposed environmental goods list. During the negotiation period, some members even went in the opposite direction. For example, the European Union (EU) decided on October 15, 2007 to apply for an anti-dumping tax on imported energy-saving bulbs from China, Pakistan, the Philippines and Viet Nam. The more energy-saving bulbs that are used in the EU, the more greenhouse gases (GHGs) can be reduced in the EU. The EU's decision may conform with WTO rules but it is against the United Nations Framework Convention on Climate Change (UNFCCC) in principle.

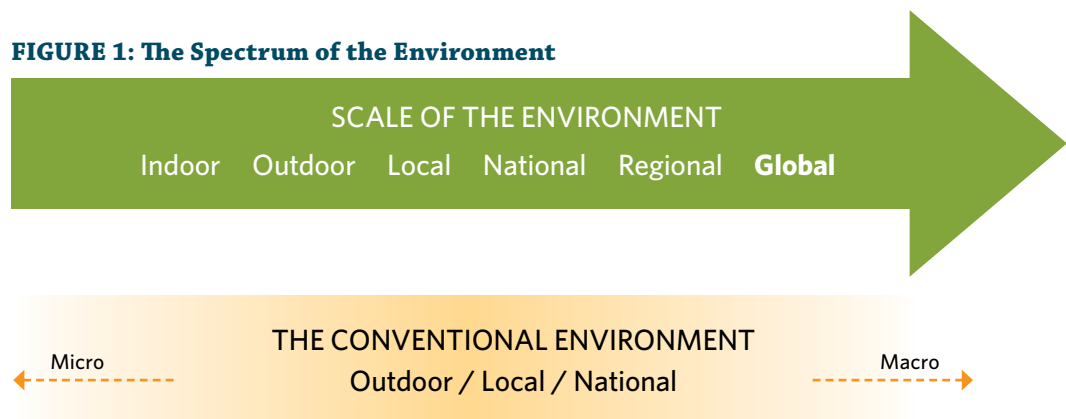
Redefining Environmental Goods and Services: Clarifying the Meaning of Environment

The demand for EGS is fueled by a growing number of environmental problems. The international community needs well-designed EGS to solve, or at least, to mitigate its prioritized environmental problems.

Regarding EGS, WTO defines goods and services in the General Agreement on Tariffs and Trade (GATT) and the General Agreement on Trade in Services (GATS) but never defines the environment. What, exactly, does the “environment” mean? This is a term that is frequently used but is often misunderstood. It is a fundamental question that should be answered before discussing environmental problems, priorities, and EGS negotiations.

Environmentalists tend to have a narrow, conventional, view of the environment. We need to deepen our thinking about the environment and expand our conceptions beyond the common view of a micro or indoor environment toward one that focuses on the macro or global environment. From a systemic view, the size of environmental externalities we have found fall on the spectrum of the environment from micro to macro level as depicted in Figure 1: indoor environment, outdoor environment, local environment, national environment, regional environment, and global environment.

FIGURE 1: The Spectrum of the Environment



Environmental Problems

Based on Figure 1, a variety of major environmental problems can be extrapolated for the entire range of the spectrum as discussed below.

- **Indoor environmental problems**

The average person spends approximately 70 percent of his or her lifetime indoors. The World Health Organization (WHO) reports that the majority of human health problems are related to indoor environmental quality. Indoor environmental goods and services can reduce, remove, recover, and resolve indoor environmental problems on a number of levels.

A major concern for the indoor environment is air pollution caused by the use of fossil energy sources for cooking and heating and a lack of proper ventilation, creating an overabundance of compounds such as SO_x, NO_x. In such situations, Particulate Matter 10 (PM₁₀)—particulate matter that is 10 micrometers or less and is of particular human health concern—could reach as high as 500 mg/m³ in the living room and 1000 mg/m³ in the kitchen, compared with the WHO standard level at 20 µg/m³. Other indoor environmental problems include the use of building and decorating materials for houses and furniture that contain toxic volatile organic compounds (VOCs), smoking indoors, issues with indoor drinking water and sewage, indoor trash, noise, radiation etc.

- **Outdoor, local, and national environmental problems**

Outdoor, local, and national environmental problems include the most familiar range of issues. The major problems include air pollution, water pollution, solid wastes, biodiversity loss and ecosystem degradation, noise, and radiation. These problems are mainly the result of a variety of common human activities.

- **Global environmental problems**

Global environmental problems have been widely recognized only in the past few decades. Major global environmental problems include climate change, ozone depletion, biodiversity loss, an increase in persistent organic pollutants (POPs), and hazardous wastes including a growing concern about electronic wastes. The trans-boundary transfer of hazardous materials is regulated by the Basal Convention, which entered into force in 1992, and other MEAs help regulate other global environmental problems.

What are the environmental priorities of the international community? Among all of the environmental problems, international organizations, such as the UN, WTO, WHO, the World Resources Institute, and the World Wildlife Fund, should focus on global issues of MEAs, Millennium Development Goals (MDGs) and Sustainable Development Goals (SDGs) to accomplish their goals. Outdoor, local, and national environmental problems are not a priority for the international community because they are mainly the responsibility of national governments.

Redefining EGS and Environmental Industry from Demand of the Environment

Based on the new understanding of the spectrum of environment and the environmental problems discussed above, environmental industries can therefore be redefined as producing EGS based on the demand of environment at the whole spectrum:

- Indoor EGS: the EGS to improve the indoor environment
- Local EGS: the EGS to improve the outdoor, local, and regional environments (conventional)
- Global EGS: the EGS to improve the global environment

This definition is wider than the current definitions used by the Organization for Economic Cooperation and Development (OECD), the Asia Pacific Economic Cooperation (APEC), and WTO, which all focus on conventional environmental problems (Local EGS). In fact, current definitions from OECD and APEC do not explicitly specify scale at all and instead define EGS as “activities which produce goods and services to measure, prevent, limit, minimize or correct environmental damage to water, air and soil, as well as problems related to waste, noise and eco-systems” while also stating that no universally accepted definition exists (Golub et al, 2011, 18). The expanded definition clearly states humanity’s demand for the addition of the global and indoor environment. At the micro level, the definition exactly fits into the UN Convention on Combating Tobacco; and at the macro level, it exactly fits into the UNFCCC, Ozone Depletion Convention, Convention on Biodiversity (CBD), and other MEAs. By this definition, EGS negotiations would also have a coherent coordination with MEAs.

This definition also implies that global EGS protects the global environment and promotes global sustainable development through trade measures at a global level; local EGS protects the local environment and promotes local sustainable development through trade measures at a local, national, and regional level; indoor EGS protects the indoor environment to avoid human health problems and promotes a more personal sustainable development through trade measures at a micro level.

“WTO should realize that Global EGS are the ‘global public goods and services’ for all of humanity.”

Therefore, we propose that WTO and other international organizations should clearly set up environmental *improvements*—at least global environmental improvements—as the goal of WTO EGA negotiations rather than allowing negotiations to continue to be driven by member state trade interests. The members of WTO should realize the negotiated EGS are for environmental improvement, especially for global environment improvement, thus do not have a major stake in individual member state trade interests. WTO should realize that Global EGS are the “global public goods and services” for all of humanity.

FIGURE 2: Redefining Environmental Industry and EGS



EGA and Climate-friendly Goods

The current EGA negotiations have not focused on global environmental issues. Some national and global environmental goods are on the list, such as wastewater treatment products. Many global environmental goods are not on the list, however, such as POPs reduction products, etc. More importantly, the current EGA list is too narrow to cover wide climate-friendly products. In Table 1, below, a sample of environmental goods is listed from the APEC list of 54 goods that are the most widely accepted (USTR, 2014). While no scope is explicitly stated in the APEC list, the listed purpose of the goods are clearly conventional EGS (APEC, 2012). In addition to the conventional goods that are contained in the APEC list, proposed global goods are listed on the right with their proposed global environmental purpose.

TABLE 1: Conventional Environmental Goods and their Purposes and Proposed Global Environmental Goods and their Purposes

Conventional Environmental Goods (from APEC list of 54 Goods)	
Good	Listed Purpose
Catalytic Incinerators	Destruction of solid and hazardous waste, including VOCs, for air quality improvement
Sludge driers	Wastewater management for water quality improvement
Refrigerant recovery and recycling units	Removes contaminants from wastewater for water quality improvement and land management

Carbon-friendly Global Environmental Goods (proposed based on our definition)	
Good	Purpose
Solar electricity generation products	Reduces GHG emissions through the substitution of conventional electricity generation equipment
Biomass utilization products	Reduces GHG emissions through the substitution of conventional fossil fuels
Bicycles	Reduces GHG emissions through the substitution of fossil fueled transportations
Energy star certified product	Reduces GHG emissions by using an energy efficient product
Low carbon certified product	Reduces GHG emissions by applying low carbon product

The narrow focus of the EGA list is a result of each of the parties of the EGA negotiations concerning themselves mainly with their own national exporting interests and merely masking these with environmental concerns. The global environment has no true representatives in the negotiations.

For the implementation of the Paris Agreement to tackle severe climate change issues, we should urge an EGA that focuses on climate-friendly products and other global environmental goods.

Global environmental organizations should play a role as a representative of the global environment in the WTO negotiations for EGA. In the preamble to the Doha Ministerial Declaration, ministers welcomed the WTO's continued cooperation with inter-governmental environmental organizations such as the United Nations Environment Program (WTO, 2007). However, while information is encouraged to be freely exchanged, these environmental organizations hold an observer only status to WTO negotiations and are unable to vote (WTO, 2007).

Metrics for climate-friendly goods in the EGA should also be set by EGA negotiators and UNFCCC negotiators. In principle, any products resulting in a net reduction of GHG emissions should be climate-friendly goods. More specific metrics should be developed that align with the goals of the Paris Agreement and other global environmental agreements.

In order to have a strong global implementation of the Paris Agreement under a market mechanism, action needs to be taken beyond lowering tariff barriers for climate-friendly goods. Non-tariff barriers, such as technical standards, subsidies and trade in service barriers also need to be addressed. Furthermore, the rules for investment issues, such as local content requirements (LCRs), and intellectual property rights (IPRs) should also be aligned toward a climate-friendly system. The EGA, with a focus on climate-friendly goods, should be a model for other multilateral and bilateral trade negotiations, such as the Trans Pacific Partnership (TPP), the Trans-Atlantic Trade and Investment Partnership (TTIP) and the Bilateral Investment Treaties (BIT) between the U.S. and China and the U.S. and India.

WTO Environmental Services

The current WTO environmental services negotiation is mainly in CTS rather than CTE. Similar to environmental goods, the definition of environmental services is one of the key issues and is holding up progress in the negotiations. Many bilateral negotiations on environmental services still use UN Central Product Classification (CPC) definitions and also partly consider the EU's definition. Harmonization is needed among the various international platforms.

The current definition of environmental services is not able to meet the demand of environmental quality, especially for global environmental and indoor environmental services. Therefore, as this paper has done for environmental goods, we redefine environmental service as well.

Based on the new understanding of the spectrum of the environment and environmental problems, we therefore redefine environmental services based on the demand of the environment on the complete spectrum:

- Indoor environmental service: services to improve the indoor environment
- Local environmental service: services to improve the outdoor, local and regional environments (conventional)
- Global environmental service: services to improve the global environment

This new and expanded definition clearly differentiates between the size of service scope by adding two new catalogues of global environmental service and indoor environmental service to the conventional local environment service. This expanded definition is much clearer and wider than the current definitions used by UN CPC and the EU. It clearly states humanity's demand for the global and indoor environment. At the micro level, it exactly fits into the UN Convention on Combating Tobacco; and at the macro level, it exactly fits into UNFCCC, Ozone depletion Convention, CBD etc. and other MEAs.

From the global perspective, global services should be the highest priority and then indoor, and local environmental services.

Therefore, this paper suggests that the WTO, both within the CTS and the CTE, should clearly set environmental improvements, at the very least global environmental improvements, as the goal of WTO environmental service negotiation, instead of member's own trade interests driven negotiation. The members of the WTO should realize the negotiated environmental services are for environmental improvement, especially for global environment improvement.

In order to better meet the demand of environmental services, we propose an environmental service catalogue that clearly lays out different trade modes associated with each service. The following matrix shows the twelve possible kinds of environmental service modes: Mode 1: cross-border supply for environmental services; Mode 2: Consumption abroad for environmental services; Mode 3: Commercial presence for environmental services; and, Mode 4: the presence of national persons for environmental services.

TABLE 2: Matrix of environmental service modes

Mode of Service	Indoor Environmental Services	Conventional Environmental Services	Global Environmental Services
Mode 1	Cross-border supply for indoor environmental services	Cross-border supply for conventional environmental services	Cross-border supply for global environmental services
Mode 2	Consumption abroad for indoor environmental services	Consumption abroad for conventional environmental services	Consumption abroad for global environmental services
Mode 3	Commercial presence for indoor environmental services	Commercial presence for conventional environmental services	Commercial presence for global environmental services
Mode 4	Presence of national persons for indoor environmental services	Presence of national persons for conventional environmental services	Presence of national persons for global environmental services

Conclusions

To achieve the globally-supported climate goals established in the Paris climate agreement, the international community needs to ensure that trade agreements work in concert with—and not against—efforts to achieve those goals.

Based on humanity's demand for the environment, we can redefine the environmental goods and services into 3 categories:

- Indoor EGS
- Conventional (outdoor/local/national) EGS
- Global EGS

For the international community, global EGS, as part of global public goods and services, should be highly prioritized for solving severe climate change and other global environmental problems.

Following the definitions for environmental goods and services, metrics for climate-friendly goods in EGA and environmental services in WTO should be proposed that go beyond reducing tariff barriers. This would help ensure a strong implementation of the Paris Agreement at a global level under a market mechanism.

References

Asia-Pacific Economic Cooperation (APEC) (2012, September 8). Annex C – APEC List of Environmental Goods. Leaders' Declarations. Retrieved from <http://tinyurl.com/APEC-List-Env-Goods>

Golub, S. S., Kauffmann, C. and P. Yeres (2011). Defining and Measuring Green FDI: An Exploratory Review of Existing Work and Evidence. OECD Working Papers on International Investment. 2011/02. Organisation for Economic Co-operation and Development Publishing. Retrieved from <http://dx.doi.org/10.1787/5kg58j1cvcvk-en>

Hu, T. et al (2010). Survey on APEC Trade Liberalization on Environmental Services. 2010 APEC Publication. Retrieved from <http://tinyurl.com/APEC-Survey-Trade>

United States Trade Representative (USTR) (2014). Fact Sheet: WTO Environmental Goods Agreement: Promoting Made-in-America Clean Technology Exports, Green Growth and Jobs. Retrieved from <http://tinyurl.com/WTO-Env-Goods-Agreement>

World Trade Organization (2007, January 16). Existing Forms of Cooperation and Information Exchange Between UNEP/MEAs and the WTO. Committee on Trade and Environment Special Session. TN/TE/S/2/Rev.2 (07-0219). WTO Publishing. Retrieved from <http://tinyurl.com/WTO-Doha-Mandate-MEAs>

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WORKING GROUP ON TRADE, INVESTMENT, AND CLIMATE POLICY

The United States is currently engaged in a series of trade and investment treaties with nations that represent 80 percent of the world's GDP and more than 90 percent of the world's carbon dioxide emissions. At the same time, the United States is engaged with the same set of countries at the United Nations at a multi-lateral basis, and with a number of those nations on a bi-lateral basis in an attempt to prevent and mitigate further degradation to the earth's climate. Given that increased trade and investment in low-carbon goods and services will be essential to achieve global climate commitments made at the historic UN climate talks in Paris in December 2015, it is imperative that these parallel policy regimes be consistent with each other.

In April 2016, Boston University's Global Economic Governance Initiative (GEGI) and Georgetown University Law Center's Harrison Institute for Public Law convened the Working Group on Trade, Investment, and Climate Policy, a small group that included both trade policy experts and climate policy experts from China, North America, and Europe. The group examined the extent to which proposed trade and investment treaties are compatible with global climate change goals. The working group emphasizes that trade and investment treaties can be instruments to advance the global climate and development agenda, but that the prevailing model of trade and investment treaties is largely incompatible with the world's broader climate goals. The model rules for trade and investment treaties need to be redesigned with an overriding principle to reward climate-friendly modes of economic activity, curb activity that worsen climate change, and provide the proper policy space so that nation-states can adequately address the climate challenge. At the very minimum, the trade model should be adjusted in such a way that treaties do not result in net increases of emissions.

The authors of this report provide important insights about opportunities and barriers for alignment of trade policies and climate goals in trade agreements under negotiation in 2016 such as the Trans-Atlantic Trade and Investment Partnership (TTIP), the Trans Pacific Partnership (TPP), and bilateral investment treaties (BITs) between the U.S. and China, and between the U.S. and India.






The Working Group on Trade, Investment, and Climate Policy is co-chaired by Pardee Faculty Research Fellow Kevin P. Gallagher (Professor of Global Development Policy, Pardee School of Global Studies, Boston University and co-director of GEGI) and Matthew C. Porterfield (Harrison Institute for Public Law, Georgetown University).

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