Building a More Effective Global Climate Regime Through a Bottom-Up Approach

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This Article presents an innovative institutional strategy for global climate protection, quite distinct from, but ultimately complementary to and supportive of the currently stalled UNFCCC climate treaty negotiations. The bottom-up strategy relies on a variety of smaller-scale transnational cooperative arrangements, involving not only states but sub-national jurisdictions, firms, and CSOs, to undertake activities whose primary goal is not climate mitigation but which will achieve greenhouse gas reductions as an inherent byproduct. This strategy avoids the inherent problems in securing an enforceable treaty to secure the global public good of climate protection by mobilizing other incentives — including economic self-interest, energy security, cleaner air, and furtherance of international development — to motivate such actors to cooperate on actions that will also benefit the climate. These bottom-up regimes will contribute to global climate action not only by achieving emissions reductions in the short-term, but also by linking the bottom-up regimes to the UNFCCC system through greenhouse gas monitoring and reporting systems. In these ways, the bottom-up strategy will help secure eventual agreement on a global climate treaty.

Introduction

The 2011 Durban Platform for Enhanced Action holds out the promise of progress towards a climate treaty that includes greenhouse gas (GHG) emissions

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limitations commitments by all major emitting countries, including developing as well as developed countries.[1] There remain, however, serious obstacles to achieving this goal, including embedded domestic political impediments in China and the United States and the challenge of creating adequate assurances of mutual compliance. The Durban Platform ensures that the top-down United Nations Framework Convention on Climate Change (UNFCCC[2]) process, involving over 190 countries, will continue its tortuous path, with promise of eventual payoff in the form of a comprehensive treaty.

Many now argue that the top-down UNFCCC treaty process needs to be supplemented by domestic efforts to build climate action bottom-up, with an emphasis on government-directed, voluntary mitigation policies and programs.[3] While we agree with the need for bottom-up mitigation initiatives, we are skeptical of any strategy, bottom-up or top-down, that depends on substantially altruistic motivations to promote a global public good that all share.[4] We propose a distinct concept of a bottom-up strategy (BUS) that relies primarily on the incentives of governments, firms, and other institutions to take action to achieve objectives other than climate protection, such as energy security, lower energy costs, development of commercially viable technologies, or pollution control, which would generate reductions of GHGs as an intended or collateral consequence.

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1 Report of the Conference of the Parties on Its Seventeenth Session, Addendum, Part Two: Action Taken by the Conference of the Parties at Its Seventeenth Session, *Decision 1/CP.17: Establishment of an Ad Hoc Working Group on the Durban Platform for Enhanced Action*, U.N. Doc. FCCC/CP/2011/9/Add.1, at 1 (Mar. 15, 2011).

2 United Nations Framework Convention on Climate Change, May 9, 1992, S. Treaty Doc. No. 102-38, 1771 U.N.T.S. 107, *available at* http://unfccc.int/resource/docs/convkp/conveng.pdf [hereinafter UNFCCC].

3 *See* Architectures for Agreement: Addressing Global Climate Change in the Post-Kyoto World (Joseph Aldy & Robert N. Stavins eds., 2007); Climate and Trade Policy: Bottom-Up Approaches Towards Global Agreement (Carlo Carraro & Christian Egenhofer eds., 2007); Steve Rayner, *How to Eat an Elephant: A Bottom-Up Approach to Climate Policy*, 10 Climate Pol'y 615 (2010); Daniel Bodansky, *A Tale of Two Architectures: The Once and Future U.N. Climate Change Regime* (Working Paper, 2011), *available at* http://ssrn.com/abstract=1773865.

4 We recognize that a substantial number of individuals favor GHG reductions to mitigate climate change, but at present, this individual altruism has not created sufficient pressure domestically to change state behavior towards climate altruism at the international level. However, in domestic or plurilateral bottom-up regimes, the domestic pressure towards altruism may help to create and sustain domestic or plurilateral climate action based solely on altruism.

Furthermore, in contrast to the UNFCCC regime and many bottom-up proposals to date, our BUS approach envisages a significant role for business firms, civil society organizations (CSOs), and a variety of international organizations, including those in finance and trade, as well as national and subnational governments. Our approach is also based on transnational cooperative arrangements. Thus, we envisage small numbers of actors of different types, based in different countries, cooperating for mutual benefit through specific regulatory, research and development (R&D), and financial programs in discrete economic or policy sectors. The regimes would contain arrangements for monitoring the compliance by the regime participants with the terms of cooperation and for dealing with noncompliance.

A further distinctive feature of our approach is to link the many different bottom-up regimes to the UNFCCC through reporting of the GHG reductions that they achieve. To the extent feasible, individual regimes would monitor, verify and report the GHG limitations achieved as a result of their activities. The information generated would be fed into the UNFCCC reporting system.

The BUS aims to make progress through many smaller undertakings rather than a single macro-level agreement. In response to the systemic pitfalls in developing effective treaties among nations to secure the global public good of climate mitigation, the BUS shifts the locus of governance to diverse bodies that follow different modes of governance, represent a much wider array of actors, and tap a different and broader range of objectives and incentives.[5] It represents both an addition to and a reconceptualization of elements of the current global climate regime complex.

In developing our BUS, we assume that states generally follow considerations of national interest, as shaped and constrained by domestic governance structures and political processes as well as international economic and political opportunities, circumstances, and institutions. Our strategy focuses on the self-interest of governments, firms, and consumers to undertake actions, such as reducing energy costs that have the effect but not the purpose of reducing GHGs. It also assumes that many consumers will take climate protection into account in purchasing decisions. Furthermore, it recognizes that some international organizations, including the multilateral development banks (MDBs), as well as government agencies have, to varying extent, the incentives and degree of latitude to pursue policies with the goal of reducing GHGs. This latitude may be the result of agency slack and/or the circumstance that the powerful nations that dominate such international organizations (IOs) favor or acquiesce in such policies, even though they are unwilling to adopt domestic limitations

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5 Kenneth W. Abbott, *The Transnational Regime Complex for Climate Change*, 30 Env't & Plan. C: Gov't & Pol'y 571 (2012).

measures or agree to internationally binding emissions limitations obligations, often due to domestic political constraints. Clubs of major nations, including the Major Economies Forum (MEF), G8, G8+5, and G20, and regional groups such as the Asia-Pacific Economic Cooperation (APEC), may also provide institutional catalysts for mutual adoption of initiatives in specific fields that achieve GHG limitation without legally binding obligations or economy-wide GHG limitations.[6] Finally, many CSOs advocate and work to secure GHG reductions. All of these different actors can play a constructive role in the BUS, accomplishing greater GHG reductions and developing increasing levels of trust, compared to what would have otherwise occurred.[7]

The BUS aims to achieve GHG reductions by enhancing the economic or other self-interested incentives of governments, firms, NGOs and other organizations to undertake actions that have GHG reductions as co-benefits. For example, the BUS may include sectoral clubs of states or firms to unlock sectorally relevant green technologies, which are not individually commercially viable, through joint R&D, and then jointly commercialize the result. The BUS may consist of the development of standards — for greener products or processes — that overcome technical barriers to trade. As well, the BUS could involve the mainstreaming of climate concerns within existing bilateral and multilateral development programs, such that existing development program goals, such as providing energy security to rural populations, can be furthered by measures, such as development of renewable energy sources, which also reduce GHGs. Through the propagation of these and other special-purpose regimes, the costs of GHG reduction across a range of sectors could be clarified and potentially reduced through, for example, the development and diffusion of commercially viable green technologies.

In order to mobilize these incentives, the BUS aims to create new, or reform existing, transnational institutions that build webs of cooperation, interlinked interests and trust that might lead to greater international cooperation on climate action. To this end, the regimes should include monitoring, reporting and verification (MRV) elements congruent with the emerging GHG MRV

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6 Robert Keohane & David G. Victor, *The Regime Complex for Climate Change* (Harv. Project on Int'l Climate Agreements, Belfer Ctr. for Sci. & Int'l Aff., Harv. Kennedy Sch., Discussion Paper No. 10-33, 2010) (presenting the key international organizations in the global climate regime).

7 The role of national governments, business firms, and civil society organizations (CSOs) in developing regulatory standard-setting regimes in a wide variety of global regulatory fields is examined in Kenneth Abbott & Duncan Snidel, *The Governance Triangle: Regulatory Standards Institutions and the Shadow of the State*, *in* The Politics of Global Regulation 44 (Walter Mattli & Ngaire Woods eds., 2009). For discussion of their role in climate, see Abbott, *supra* note 5.

arrangements under the UNFCCC. This will help build and maintain participation in the regimes by tracking progress, promoting assurances of mutual compliance, and enabling countries participating in the BUS regimes to include in their UNFCCC reporting the GHG emissions reductions achieved by those regimes. Building networks of cooperation and accountability within and among the diverse BUS regimes may help pave the way for development of robust compliance assurance arrangements at the UNFCCC level. Furthermore, the actions of BUS regimes can help demonstrate that GHG reductions can be achieved through programs that are compatible with economic and other incentives and goals. These steps should enhance the likelihood of successfully negotiating a climate treaty that provides for significant emissions reductions. Accordingly, our BUS is conceived as a complement to — rather than a substitute for — the UNFCCC Durban Platform process.

In order to develop our version, and examples, of a bottom-up strategy, this Article first outlines in Part I both the barriers to achieving a comprehensive global GHG treaty, and the necessity for global action. In Part II, we examine the incentives of various actors (states, sub-state governments, firms and individuals) to undertake actions that have the indirect effect of reducing GHG reductions — the actions upon which our BUS regimes are built. We then outline in Part III some of the transnational institutional arrangements that will be necessary for the success of the BUS regimes. In Part IV, we suggest some priority BUS regimes. Part V articulates the necessary international components to turn the several BUS regimes into an international strategy, including linkage with the UNFCCC reporting system.

I. The Need for an Alternative Climate Strategy

Climate change provides the paradigmatic case for the need for a global agreement to secure a global public good. Because GHGs mix globally, and climate change is a function of global atmospheric concentrations, unilateral state action cannot be relied on to limit emissions sufficiently to prevent a dangerous buildup of GHGs in the atmosphere that would affect both nations that choose to act and those that do not. If a nation unilaterally limits its GHG emissions, it bears all of the costs of such measures, but most of the benefits accrue to other nations. Moreover, the costs of such measures to the country adopting them are exacerbated, in a world of international free trade and investment, by the leakage of investment and economic activity to jurisdictions that do not have GHG regulation and accordingly offer lower production costs. These problems could be avoided if any unilateral mitigation action by one jurisdiction were accompanied by similar actions on the part

of others, but when the economic stakes are as high as they are in the case of climate mitigation, the incentives for free-riding are extremely powerful.[8]

Notwithstanding this collective action dilemma, in cases where the global benefits of mitigation are large, and the costs are relatively small, one or two large jurisdictions might reap a sufficient share of the global benefits to justify unilateral mitigation. Even so, such jurisdictions will have strong incentives to develop a broader international regulatory regime to share the effort.[9] This occurred for ozone-depleting substances, when the United States and the United Kingdom jointly developed the Montreal Protocol,[10] and through financial transfers and a credible threat of trade sanctions were able to enlist other countries to join.[11] In the case of climate, the European Union is the sole major jurisdiction committed to significant unilateral domestic mitigation action.[12] This commitment reflects a variety of goals and interests, including concern over climate change impacts, energy security, technological leadership, societal and political revitalization, global soft power, the influence of domestic green political constituencies, and the role of elites in shaping European Union policies.[13]

The European Union, however, has not been able to mobilize any other major emitting country to join in this effort. Most MEF country governments have concluded that the discernible national benefits from unilateral national action to mitigate climate change are unlikely to outweigh the national costs

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8 *See* Scott Barrett, Environment and Statecraft: The Strategy of Environmental Treaty-Making (2003).

9 *See* Mancur Olson, The Logic of Collective Action: Public Goods and the Theory of Groups (1965) (analyzing the "exploitation of the great by the small").

10 Montreal Protocol on Substances That Deplete the Ozone Layer, Sept. 16, 1987, 1522 U.N.T.S. 3; *see also* David W. Fahey, *The Montreal Protocol Protection of Ozone and Climate*, 14 Theoretical Inquiries L. 21 (2013).

11 The Montreal Protocol regime reflects the self-interest of the United States and the European Union, which faced a similar cost-benefit analysis for purely domestic action, to enlist other countries in controls, including through trade sanctions and side payments, *see* Barrett, *supra* note 8, at 227-30.

12 *See* Daniel Farber, Subglobal Climate Action: Symbolic, Substantive, or Strategic?, Paper Presented at University of Chicago Conference on Climate Change Justice (May 12, 2012), *available at* http://www.law.uchicago.edu/files/files/Farber%20paper.pdf. Australia and New Zealand have also committed to significant action, but their share of global emissions is small.

13 For a more complete list of the potential motivations of national, or in the case of the European Union — supranational, governments to unilaterally reduce emissions, see *infra* Part II.

over a politically relevant timeframe.[14] Political actors generally weigh near-term costs far more heavily than long-term benefits, even though the benefits from averted climate change are great. Uncertainties over mitigation costs and their potential adverse impacts on the economy, reinforced by the political power of high-GHG economic interests, have also helped to make MEF countries outside the European Union unwilling to commit to mitigation measures at large scale.

In order to deal with the competitive disadvantage imposed by investment leakage, a major jurisdiction wishing to adopt a domestic GHG regulatory system could impose a border GHG adjustment on imported goods based on their production and process methods' (PPM) GHG emissions.[15] If successful, this could lead other major jurisdictions to adopt equivalent regulatory measures. However, such a system would be extremely complex to administer, trigger protracted World Trade Organization (WTO) challenges, potentially provoke acute trade conflicts, and stimulate powerful resistance.[16]

As a consequence, despite talk of border carbon adjustment schemes in Europe and the United States, no major jurisdiction has implemented a unilateral border adjustment system (which would be costly to its consumers), and if one did, it is doubtful that its imposition would succeed in leading other MEF nations to adopt significant GHG regulatory limitations in response. Even if a border adjustment initiative reduced the costs of GHG limitations due to leakage, significant costs would remain; the domestic political cost-benefit analysis might still be unfavorable to significant GHG limitation. As

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14 Jurisdictions will have incentives to adopt adaptation measures because they will reap all or most of the benefits of such measures. Some adaptation measures may also limit GHGs or complement mitigation measures. However, these co-benefits will not be sufficiently extensive or strong to result in major GHG reductions.

15 Aaron Cosbey, Int'l Inst. for Sustainable Dev., Border Carbon Adjustments (2008), *available at* http://www.iisd.org/pdf/2008/cph_trade_climate_border_carbon.pdf; Joshua Elliott, Ian Foster, Sam Kortum, Gita Khun Jush, Todd Munson & David Weisbach, *Unilateral Carbon Taxes, Border Tax Adjustments and Carbon Leakage*, 14 Theoretical Inquiries L. 207 (2013).

16 For discussion of the trade law issues surrounding this type of response, see Patrick Low, Gabrielle Marceau & Julia Reinaud, *The Interface Between the Trade and Climate Change Regimes: Scoping the Issues* (WTO, Working Paper No. ERSD-2011-1, 2011), *available at* http://www.wto.org/english/res_e/reser_e/ersd201101_e.pdf; Joost Pauwelyn, *US Federal Climate Policy and Competitiveness Concerns: The Limits and Options of International Trade Law* (Duke Univ., Working Paper No. 07-02, 2007), *available at* http://nicholasinstitute.duke.edu/climate/policydesign/u.s.-federal-climate-policy-and-competitiveness-concerns-the-limits-and-options-of-international-trade-law.

discussed below, however, the European Union has taken the more limited step of imposing its regulatory program for limiting GHG emissions on international airlines that serve E.U. countries.

The conclusion of the foregoing analysis is that some form of international agreement among major emitting nations — which for the sake of convenience we equate with the MEF jurisdictions — providing for significant GHG limitations with credible assurances of compliance will be necessary to achieve the global public good of climate protection. Let us term this a GHG Pact.

A. Obstacles to Achieving a GHG Pact

The strategy to achieve a global climate agreement followed by the UNFCCC process since the 1992 Rio Conference has been top-down and comprehensive, seeking to include all GHGs, all sources and sinks, and all countries, not just MEF jurisdictions; and it has aimed for legally binding limitations commitments in the first instance. Despite the fact that collective benefits to the major players, the MEF jurisdictions, of some form of limitations agreement appear to outweigh the costs to them, this strategy has thus far failed. Notwithstanding the Durban Platform, we believe that the state-centric UNFCCC process is much more likely to overcome fundamental structural obstacles to achieving a GHG Pact if additional, more targeted transnational initiatives to limit emissions, outside the UNFCCC process and involving non-state actors, are undertaken first. These initiatives, which represent "building blocks" for cooperation in discrete sectors or policy areas, constitute the BUS.

Domestic priorities and political circumstances in many major MEF jurisdictions, together with the difficulties in securing adequate compliance assurance arrangements to deal with free-riding,[17] are major reasons for the lack of progress. The UNFCCC strategy of legally binding targets and timetables for emissions reductions has compounded the problem of securing agreement because of the very great uncertainties regarding mitigation costs and future economic conditions, which together make many governments reluctant or unwilling to make legally binding international treaty commitments to achieve major quantified reductions five to ten years in the future. An internationally binding commitment by a country to a specific national emissions cap also risks creating a zero-sum conflict among domestic interest groups over the allocation of the burden of reductions; a battle politicians wish to avoid. While the United States championed the targets and timetables approach in the 1990s, the European Union preferred policies and measures, in which countries would agree to adopt harmonized standards for controlling different

17 Barrett, *supra* note 8, at 359.

gases and emissions sources.[18] Ironically, Europe has now embraced targets and timetables, while the United States has abandoned them.

An oft-remarked problem with the path taken by the UNFCCC process up to Durban was its focus on universal participation by all countries, but within a structure prescribed by the Berlin Mandate,[19] resulting in the sharp divide in developed/developing country obligations established in the Kyoto Protocol.[20] These problems could be short-circuited by a stepwise strategy that began with a limitation agreement among a few key jurisdictions. If, for example, the European Union, United States and China agreed to develop a GHG Pact, they could enlist the other MEF jurisdictions, including, to the extent necessary, trade measures and side payments on the model of the Montreal Protocol regime, or other inducements. The arrangements could subsequently be extended to include all of the UNFCCC Parties. However, it appears that, at least currently and for the foreseeable future, the dominant decision-makers in the United States and China (and India as well) view the economic and political risks of such an initiative as greater than the national benefits from mitigated climate change. Without the participation of these key jurisdictions, a GHG Pact will not be achieved.

B. A Bottom-Up Strategy

The inability to achieve a GHG Pact through the current international negotiations requires a radical rethinking of strategy. While the international UNFCCC negotiations will and should continue, attention and energy should focus on identifying and developing an array of discrete transnational regulatory agreements and programs — the BUS regimes. The BUS will involve not just national governments, but also a wide range of highly important actors

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18 The United States argued that an umbrella target that covers all gases, sources and sinks would allow countries the flexibility to pursue the cost-effective means for limiting overall GHG emissions, including by facilitating international emissions trading, and enjoy environmental advantages, *see* Richard Stewart & Jonathan Weiner, Reconstructing Climate Policy: Beyond Kyoto (2003).

19 Report of the Conference of Parties on Its First Session, Addendum, Part Two: Action Taken by the Conference of the Parties at Its First Session, *Decision 1/CP.1: The Berlin Mandate: Review of Adequacy of Articles 4, Paragraph 2, Sub-Paragraph (a) and (b), of the Convention, Including Proposals Related to a Protocol and Decisions on Follow-Up*, U.N. Doc. FCCC/CP/1995/7/Add.1 (June 6, 1995).

20 Kyoto Protocol to the United Nations Framework Convention on Climate Change, Dec. 11, 1997, 2303 U.N.T.S. 162, *available at* http://unfccc.int/resource/docs/convkp/kpeng.pdf.

that are not parties to the UNFCCC, including subnational governments, firms, CSOs and IOs.

The BUS aims to accomplish two goals. First, to capture emissions reductions that result from the economic and other self-interested incentives of governments, firms and consumers to undertake activities that have the effect, but in many cases not the purpose, of reducing GHG emissions. The many diverse BUS regimes will be thematically sectoral and sometimes regional in scope and often include hybrid public/private governance arrangements. Many of them would deal with the energy sectors, which account for forty-eight percent of GHG emissions (sixty-one percent if transport is included).[21] This sectoral focus recognizes that even in jurisdictions where national governments are unwilling to commit to economy-wide GHG caps, there may often be governmental and private actors with the incentives and freedom of maneuver to participate in transnational BUS regimes aimed at other objectives, but producing climate benefits as well.

The second goal is to create institutions that will allow a more robust climate action regime to emerge in the future by building webs of cooperation and mutual trust between and among political jurisdictions at different levels, firms, CSOs, and other actors. For the BUS regimes, these institutions will focus primarily on monitoring and reporting, both internally on the performance of regime actors in meeting their regime obligations, and externally, where feasible, on the GHG reductions achieved through the regimes. These monitoring and reporting arrangements will promote mutual compliance by participants, and build trust with the broader climate regime through public reporting of GHG emissions and linkage to the UNFCCC reporting system.[22]

These diverse arrangements, and the means for linking, supporting, and stimulating them, constitute the BUS for climate protection. If successful, this approach would achieve significant GHG reductions and lower the economic and political costs of achieving such reductions by stimulating innovation and diffusion of low-GHG technologies, policies and practices within a variety of particular fields.

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21 *World GHG Emissions Flow Chart*, Climate Analysis Indicators Tool, http://cait.wri.org/figures.php?page=/World-FlowChart (last visited Dec. 6, 2011).

22 *See infra* Part V. A key question is how the UNFCCC, as well as other major multilateral regimes concerned with climate, energy, environmental protection, and economic development (G20, multilateral development banks (MDBs), United Nations Development Program, United Nations Environment Program, World Trade Organization, Montreal Protocol, etc.), might support and link with the various components of a BUS. It will be particularly important that the BUS strategy be designed, implemented and seen to support rather than undermine the UNFCCC process.

Of course, a BUS would be greatly facilitated by domestic or transnational regulatory measures that impose a price on GHG emissions as such. Even in the absence of a GHG Pact, it may be that a BUS could achieve significant reductions in GHG emissions as a byproduct of pursuing other specific objectives, such as liberalizing trade in green technologies, and, furthermore, encourage MEF countries to adopt some limited forms of GHG regulatory/pricing programs. For example, a GHG regulatory program in one country using emissions trading can provide a platform for credit/offset arrangements with other jurisdictions that can encourage them to adopt GHG regulatory measures. Such initiatives could support a deepening of BUS, potentially producing a virtuous cycle.

II. Key Actors' Incentives to Adopt Measures That Have the Effect But not the Purpose of Reducing GHGs

A. Economic Incentives of Consumers and Firms

Individual consumers and firms already respond to economic incentives to purchase energy-efficient goods and services in order to reduce energy costs and the risks imposed by energy price fluctuations, producing GHG reductions as a co-benefit. In addition, firms may respond to a number of additional market-based incentives to meet this demand for green products. These products and services may come in three varieties: ones that are energy-efficient; ones that have low GHG emissions themselves; and ones that are the result of PPM that are low-GHG-emitting.

In the case of firms, there are three additional economic incentives. First, firms may achieve a competitive advantage by developing and marketing energy-efficient goods and services. These may include energy-efficient vehicles, smart grid technologies, building energy conservation technologies, fuel-efficient turbines, advanced coal combustion technologies, or new-generation nuclear plants. Second, firms may develop such goods in order to secure the patronage of consumers with preferences for them and commercial and government customers with regulatory and other incentives to purchase them — for example, hybrid and electric cars. Third, to the extent that firms believe that climate regulations will be adopted in the future, they will have further incentives to invest in R&D in order to position themselves as future market leaders in low-GHG technologies.

As a result of these incentives, there are a growing number of "Green Leader" firms that foresee current and future competitive advantages in developing and marketing energy-efficient, low-GHG technologies and goods and associated

services (banking, investment, insurance, carbon market services, energy audits/consulting). As discussed below, these firms can gain by transnational cooperation in the development and marketing of green products and services.

B. Incentives of Governments

Even assuming that political demand for government action on GHG reductions is weak, there are still significant incentives for all levels of government in diverse jurisdictions to adopt measures that have climate co-benefits without having explicit climate objectives. Similarly, there may be measures whose substantial purpose is GHG reductions, but are accepted by various political constituencies because of non-climate goals, such as energy cost savings, energy security, or global competitive leadership and profit opportunities in green technologies.

Governments, in purchasing goods and services and managing their property, have incentives to reduce their energy use for reasons similar to those of firms and consumers. Furthermore, governments have an array of incentives, acting in their governmental capacities, to adopt regulatory and financial/spending programs to prompt firms and consumers to undertake actions that will have the effect of reducing GHGs. We consider here purely domestic measures aimed at securing national benefits. In addition to their incentive to reduce energy costs, the following is an array of programs that governments have incentives to adopt in order to secure non-climate benefits, but which have the side-effect of reducing GHG emissions.

1. National Governments Only

National governments have strong incentives, and the regulatory competence, to take steps, including promoting energy efficiency and renewable energy sources, in order to reduce energy imports for security and balance of trade, to lessen dependence on potentially unreliable imported fuel and energy supplies, and to mitigate price volatility in internationally traded fossil fuels. Putting their various other limitations aside, nuclear power, solar, wind, hydro, grid, or storage each presents co-benefits in reduced GHGs. Thus, one reason for China's drive for energy efficiency is its increasing dependence on imported oil and natural gas.[23]

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23 For example, Small Island Developing States (SIDS) Sustainable Energy Initiative aims to decrease reliance on imported GHG-intensive energy sources with high transportation costs. The project is being run as a partnership between the Alliance of Small Island States, UNDP, World Bank and Denmark. The project's goal is

Governments also have strong incentives to stimulate exports of domestic technologies, goods and services that reduce GHG emissions through guarantees, subsidies, etc. for exports of renewable and energy-efficient technologies, goods and services manufactured and provided by domestic firms. For example, China has aggressively used state subsidies to spur development of renewable energy technologies. In 2010, it led the world in both new renewables investment and existing renewable capacity (including hydro).[24] The impetus behind the investments seems not to be reducing GHG emissions, as China continues to add new coal-fired power plants weekly. Rather, it appears to be driven by a desire to achieve global market dominance in these technologies to enhance China's global economic and political power.

2. National and Subnational Governments

National and subnational governments have the regulatory ability to reduce energy use, and consequent costs and uncertainty, in order to advance domestic welfare,[25] and to enhance the global market competitiveness of domestic firms.[26] As well, they have the incentive to reduce conventional air pollution to achieve domestic health and economic benefits, producing co-benefits in the form of reduced GHG emissions. Similarly, they reduce ozone-depleting substances, many of which are also GHGs, while limiting the substitution of other substances which do not deplete ozone but are powerful GHGs.[27]

National and subnational governments may also have the incentive to modify forestry and sustainable agricultural practices to achieve various domestic benefits, such as secure access to food, or reduced physical environmental degradation. Many regulatory modifications that allow land to be left natural (i.e., increasing crop output on currently farmed land, or leaving forests standing) would have significant GHG reduction benefits.

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to promote renewable energies on small island states, *see Sids Dock*, Alliance of Small Island States, http://aosis.info/sids-dock/ (last visited Nov. 25, 2011).

24 Renewables 2011, Global Status Report 15 (2011).

25 For example, Maine Housing provides grants to low-income houses to allow them to improve energy efficiency, *see Energy Assistance Programs*, Maine Housing, http://www.mainehousing.org/programs-services/energy/energy-assistance-programs (last visited Nov. 25, 2011).

26 For a comparative analysis of government support for and progress on renewable energy development, see PEW Charitable Trusts & Clean Energy Econ., Who's Winning the Clean Energy Race? (2010), *available at* http://www.pewenvironment.org/uploadedFiles/PEG/Publications/Report/G-20Report-LOWRes-FINAL.pdf; Renewables 2011, *supra* note 24.

27 *See* Fahey, *supra* note 10.

Finally, national and subnational governments have the incentive to adopt regulatory and other programs (e.g., subsidies, feed-in tariffs, renewable portfolio standards, government purchases) in order to strengthen the varied market incentives of firms to produce energy-efficient goods and services. Such firms would then have an incentive to support domestic or transnational regulatory actions to limit GHGs and actions through national or multilateral financial bodies to support green exports and associated development strategies, thereby linking green industry with governmental objectives.[28]

3. Regional and Municipal Governments

Local governments may have the incentive to reduce energy use and traffic congestion, and to rationalize management of wastes through the adoption of green development/redevelopment programs. Such programs will reduce costs through greater energy efficiency, and contribute to less local air pollution. In addition, they may contribute to an increased standard of living, and thereby attract residents or high-value firms with preferences for the sort of services and amenities offered by compact, sustainable urban development.[29]

Some regulatory and finance/subsidy programs available at all levels of government can promote several of the above goals simultaneously, including feed-in tariffs for renewables, subsidies/regulatory requirements for domestically produced biofuels, energy labeling and efficiency requirements and standards,[30] and programs to subsidize or assist building owners to retrofit energy-efficient materials and technologies.[31]

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28 For example, the Israeli firm Better Place is developing an electric car battery exchange/charging technology and infrastructure, partnering with car manufacturers, local governments, commercial customers (firms with vehicle fleets who are also investors), and renewable electricity suppliers, *see* Better Place, http://www.betterplace.com (last visited Nov. 25, 2011); *Better Place Raises Another $200 Million*, Sustainable Business.com (Nov. 14, 2011, 2:15 PM), http://www.sustainablebusiness.com/index.cfm/go/news.display/id/23145.

29 *See* Richard Florida, Cities and the Creative Class (2005); OECD, Green Cities: New Approaches to Confronting Climate Change (2009), *available at* http://www.oecd.org/dataoecd/46/33/45377963.pdf.

30 Michael Vandenbergh, Thomas Dietz & Paul Stern, *Time to Try Carbon Labeling*, 1 Nature Climate Change 4 (2011).

31 *See* Jules Bailey, Energizing Cities: New Models for Driving Clean Energy Investment (2010), *available at* http://newenergycities.org/most-recent-posts/resources/energizing-cities-new-models-for-driving-clean-energy-investment/view. Examples include on-bill financing (allows retrofit loans to be collected by utilities), PACE financing (allows retrofit loans to be repaid through property taxes) and performance contracting (service providers are responsible for installing

Although we have focused on incentives to undertake actions that reduce GHG emissions as a co-benefit, there are a number of subnational regulatory programs (in the United States and elsewhere) whose explicit purpose is to reduce GHG emissions. The emissions trading programs of the Western Climate Initiative[32] (California and some western states, the Mexican state of Chiapas, and several Canadian provinces) and Regional Greenhouse Gas Initiative[33] (power companies in the northeastern United States) are examples. These programs will likely continue to exist both because sufficient political demand exists at the subnational level, and because the programs promise a variety of non-climate economic benefits (including revenue streams from permit allocation).

III. BUS Regimes: Transnational Regulatory and Financial Arrangements to Enhance Incentives for Actions That Reduce GHG Emissions

As outlined in Part II, governments, firms, and CSOs have incentives to create and support a wide variety of regulatory and financial arrangements and programs at the domestic level to promote innovation and diffusion of energy-efficient and low-GHG technologies, products and services. Many regimes are established by governments or quasi-governmental agencies, including energy efficiency regulatory standards for products, programs for financing housing retrofit, feed-in tariff and renewable energy portfolio programs. Others are established by trade associations, professional groups, and environmental/consumer CSOs, sometimes in collaboration with governments.[34] Existing examples include Leadership in Energy and Environmental Design (LEED)

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and managing energy efficiency measures and are paid out of a portion of savings generated).

32 Western Climate Initiative, http://www.westernclimateinitiative.org (last visited Nov. 5, 2012).

33 Regional Greenhouse Gas Initiative, http://www.rggi.org (last visited Nov. 5, 2012).

34 There is some question whether these domestic regimes, should they limit foreign investment or trade, are contrary to international or bilateral investment and trade treaties, *see* Int'l Ctr. for Trade & Sustainable Dev. (ICTSD), Fostering Low Carbon Growth: The Case for a Sustainable Energy Trade Agreement (2011), *available at* http://ictsd.org/i/publications/117557/; Arunabha Ghosh, *Seeking Coherence in Complexity? The Governance of Energy by Trade and Investment Institutions*, 2 Global Pol'y 106 (2011). Progress on this issue was made at the most recent APEC meeting, Int'l Ctr. for Trade & Sustainable

building certifications, low-energy and GHG use certification and labeling programs,[35] carbon accounting standards,[36] and supply chain regulatory programs that include environmental standards for suppliers.[37] These programs can be leveraged and strengthened through transnational cooperative arrangements.

The ambition and efficacy of domestic and subnational measures that have GHG reduction co-benefits could be significantly enhanced if linked transnationally with similar measures in other countries. The transnationally linked BUS regimes can address competitive and free-riding concerns, promote mutual learning, and potentially lead to increases in regulatory ambition among the regime participants. A number of such programs are already emerging, but at this early stage, they do not yet include a strong regulatory element.

Beyond harmonizing or linking domestic programs, including at the subnational level, BUS regimes may also be established initially at the transnational level without waiting for a sufficient number of national programs to develop. Many of these regimes will be established and maintained by networks among domestic government officials, firms, trade associations and CSOs, including hybrid arrangements involving different categories of actors. Others will be established by international or regional organizations.

A. Examples of Potential BUS Regimes

Harmonization of technical and regulatory standards for energy-efficient/low-GHG technologies, goods and services. Examples include programs to harmonize technical and regulatory standards for energy-efficient/low-GHG

Dev. (ICTSD), *APEC Leaders Pledge to Increase Cooperation on EGS Trade*, 11 Bridges Trade BioRes, http://ictsd.org/i/news/biores/118312/ (Nov. 2011).

35 For example, the Carbon Trust Footprinting Certification Company in the United Kingdom verifies the carbon footprints of goods and services with reference to PAS 2050 and the GHG Protocol Product Life Cycle Standard. Companies that meet the standard are given the right to use the Trust's easily identifiable Carbon Reduction Label on their products. *See* Carbon Trust, http://www.carbontrust.com (last visited Nov. 5, 2012).

36 Examples include International Organization for Standardization (ISO), ISO/DIS 14067, Carbon Footprint of Products — Requirements and Guidelines for Quantification and Communication (2012) (draft), *available at* http://www.lis.edu.es/uploads/c86b9902_9dbc_4928_bf66_a2013075ffe5.pdf; British Standards Institution (BSI), PAS 2050:2011 — Assessing the Life Cycle Greenhouse Gas Emissions of Goods and Services (2011), *available at* http://shop.bsigroup.com/en/ProductDetail/?pid=000000000030256750.

37 Michael Vandenbergh, *The New Wal-Mart Effect: The Role of Private Contracting in Global Governance*, 54 UCLA L. Rev. 913 (2007).

technologies, goods and services and standards and protocols for measuring and reporting energy use and GHG emissions. These programs often include, or are linked with, compliance certification programs for applicable standards, protocols and methodologies.[38] As noted by Scott Barrett, such arrangements, based on technology standards, can expand markets, lower costs, widen competition, and promote innovation and diffusion.[39]

MRV programs for energy use and GHG emissions. These programs would focus on adoption and harmonization of methodologies and protocols for measuring, monitoring and reporting energy use and/or GHG emissions from sectoral activities and associated certification programs for compliance with standards, protocols and methodologies. These arrangements can stimulate demand and enlarge markets for energy-efficient/low-GHG technologies, goods and services. Energy-efficient/low-GHG labeling and certification standards and programs for goods and services and associated supply chain MRV arrangements can have similar effects.[40]

Enhancing resource efficiency in industrial processes. Transnational groups of firms in key industrial sectors, such as aluminum, cement, paper and pulp, textiles, iron, and steel, might form regimes aimed at meeting targets for energy efficiency and other costs savings, potentially through joint R&D or sharing firms' knowledge of industrial techniques, including changes in production arrangements and materials management techniques.[41]

Renewable energy clubs. Major jurisdictions competing in development of and global market position for renewable technologies could find mutual benefit in establishing a cooperative framework for the sector. For example, some combination of China, the United States and Germany might agree to reduce their subsidies to domestic firms and open their internal markets to each other's low-carbon technologies with the goal of advancing R&D and emergence of new technologies that cannot be nurtured effectively by one country alone.

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38 For example, Energy Star ratings given to domestic appliances, *see About Energy Star*, Energy Star, http://www.energystar.gov/index.cfm?c=about.ab_index (last visited Nov. 8, 2012).

39 *See* Barrett, *supra* note 8, at 393-97.

40 *See* Carbon Trust, *supra* note 35.

41 *See, e.g.*, Battelle & World Bus. Council for Sustainable Dev., Towards a Sustainable Cement Industry (2002), *available at* http://www.wbcsd.org/web/publications/batelle-full.pdf; Worldsteel Ass'n, Worldsteel Climate Change Initiatives: Presentation to International Workshop on International Standards to Promote Energy Efficiency and Reduce Carbon Emissions (2009) (on file with author).

Bilateral and regional air pollution control programs (e.g., East and South East Asia control of fossil fuel combustion pollutants other than CO_2) that achieve GHG reductions as a co-benefit.[42]

Linking market based systems for controlling air pollution. Emissions trading systems for conventional pollutants and for CO_2 have been adopted or are in the process of being adopted by different jurisdictions, including the European Union and its Member States, other countries such as New Zealand and Australia, and subnational jurisdictions such as California. CO_2 trading systems are found in those jurisdictions where there are pockets of strong support for mitigation. The jurisdictions that have one or the other type of trading program could link similar systems through agreements and management arrangements that would enable credits traded in one system to be traded with those in another, enhancing the economic and climate benefits achieved.

Using the Montreal Protocol ozone regime to regulate halocarbon substitutes, such as HFCs, that are potent GHGs whose production was stimulated by controls on ozone-depleting substances,[43] and additional ozone depleters that are also GHGs, particularly N_2O.[44]

Green cities programs. Eco2 Cities and similar networks of cities can develop common platforms for design, regulation and investment to reduce energy use and GHGs, traffic congestion, waste, etc.[45] Cities currently account for over fifty percent of GHG emissions; this percentage will grow with continuing urbanization.

Energy Efficiency/Climate Financing Arrangements. A wide variety of arrangements, public, private, and hybrid, can promote investment in energy-efficient/low-GHG technologies and infrastructure, especially in developing countries.[46] Examples include World Bank Carbon Investment Funds, export

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42 *E.g.*, *Malé Declaration on Control and Prevention of Air Pollution and Its Likely Transboundary Effects for South Asia*, The Int'l Ctr. for Integrated Mountain Dev., http://www.icimod.org/?q=467 (last visited Nov. 29, 2011) (an overview of the 1998 Malé Declaration).

43 Guss J.M. Velders et al., *The Large Contribution of Projected HFC Emissions to Future Climate Forcing*, 106 Proceedings Nat'l Acad. Sci. 10949 (2009).

44 Mario Molinaa et al., *Reducing Abrupt Climate Change Risk Using the Montreal Protocol and Other Regulatory Actions to Complement Cuts in CO_2 Emissions*, 106 Proceedings Nat'l Acad. Sci. 20616 (2009).

45 *Eco2 Cities: Ecological Cities as Economic Cities Synopsis*, World Bank, http://web.worldbank.org/WBSITE/EXTERNAL/TOPICS/EXTURBANDEVELOPMENT/0,,contentMDK:22643153~pagePK:148956~piPK:216618~theSitePK:337178,00.html (last updated Apr. 26, 2011).

46 *See* Peter Newell, *The Governance of Energy Finance: The Public, the Private*

credit agency policies favoring Green Energy projects, green stock indexes, Asia-Pacific Partnership on Clean Development, and the Equator Principles.

Furthermore, there may also be opportunities for combining programs to leverage further reductions. A regional program for control of non-CO_2 fossil fuel air pollutants may be combined with a program of standards and arrangements for monitoring, reporting and registering GHG reductions achieved because of such controls. The purpose would be to provide the basis for future regulatory recognition and offset trading of the reductions, which would create support by regulated firms for establishment of GHG regulatory and trading programs.

B. Priority Initiatives

From among the list of candidates above, we discuss in further detail four BUS regimes that are, we believe, among the most promising initial opportunities for harnessing the incentives and energies of countries, subnational jurisdictions, firms and other actors to undertake actions in specific areas that will result in GHG reductions.

1. Transboundary Regional Air Pollution

The need for transnational cooperation to address transboundary regional air pollution is already an issue in Europe, North America, South Asia and East Asia, involving almost all the MEF jurisdictions (with the possible exception of Brazil). Current air pollution agreements include one between Europe and North America (Long-Range Transboundary Air Pollution Agreement), the United States-Canada agreements, and the South East Asian haze agreements.[47] These could be extended to provide MRV for GHG reductions that are incidental to the main purpose of the agreements, but are produced by them. Agreements could be developed, or strengthened, in East and South Asia and the trans-Pacific (United States-China), with the GHG-MRV architecture embedded from the start.

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and the Hybrid, 2 Global Pol'y 94 (2011); Christopher Wright, *Export Credit Agencies and Global Energy: Promoting National Exports in a Changing World*, 2 Global Pol'y 133 (2011).

47 Economic Comm'n For Europe, Convention on Long-Range Transboundary Air Pollution, Nov. 13, 1979, 1302 U.N.T.S. 317; Agreement on Air Quality, Can.-U.S., Mar. 13, 1991, 1852 U.N.T.S. 80; Ass'n of South-East Asian Nations, Agreement on Transboundary Haze Pollution, June 10, 2002, *available at* http://haze.asean.org/hazeagreement/.

Two key warming agents, tropospheric ozone and black carbon particulate, could be reduced by such agreements, either by direct controls under these agreements targeted at these pollutants, or by fortuitous reductions occurring ancillary to the reduction of other air pollutants. Reductions of CO_2 could also occur as a result. Furthermore, by inducing such agreements to consider explicitly the side-effects of control actions on CO_2 and other GHGs, certain control strategies, notably scrubbing of SO_2 and NOx, that have the effect of increasing the emissions of GHGs would be eliminated or their prominence reduced.

2. Extending the Scope of the Existing Montreal Protocol Regime

The Montreal Protocol has essentially forced some chemicals that act as strong GHGs (e.g., HFCs) onto the market to substitute for others that were both strong GHGs and ozone-depleters. Discussions are underway already with regard to now restricting the non-depleting substitutes under Montreal rather than the stultified UNFCCC process.[48] At the same time, very preliminary suggestions have been made to control N_2O, a long-lived GHG, which would become the primary ozone depleter if halocarbon emissions were completely eliminated.[49] The sources of N_2O include certain industrial processes, fertilizer application, some combustion processes and sewage outfalls. The Montreal regime has already produced far more GHG reductions incidental to its primary role of ozone layer protection than has the Kyoto Protocol in pursuing its primary role; its climate performance could be further enhanced through the steps outlined above. Although the primary aim of controlling HFCs would be limiting GHGs rather than protecting the ozone layer, countries and firms could well agree on such a limited and targeted undertaking, based on technological development of substitutes, when they would be unwilling to agree to an economy-wide cap.

3. International Harmonization of Domestic Technical Standards for Green Products and PPMs

Technical standards for energy-efficient/low-GHG technologies, goods and services, and standards and protocols for measuring and reporting energy use and GHG emissions vary widely among countries. The various standards cumulatively impose a very significant constraint on trade in green technologies and knowledge that is substantially greater than that from tariffs. These regulatory standards often include — or are linked with — certification

48 *See* Velders et al., *supra* note 43.

49 *See* Molinaa et al., *supra* note 44.

programs for compliance with relevant standards, protocols and methodologies, including those for measuring conventional air pollutants and GHGs. A broad international harmonization effort involving a large number of developed and emerging economies could likely produce net gains for all countries as well as liberalize trade and lower costs in products and services to enhance energy efficiency and reduce pollution. This initiative could be accomplished outside of the stalled WTO process, although in conformance with WTO disciplines. If successful, this could be followed by a similar initiative of tariffs for such products and services.

4. Transnational Clubs for Innovation and Diffusion of Green Technologies
A limited number of governments, with the participation of relevant firms, could develop a variety of cooperative ventures (Clubs) for the development and adoption of technologies in various specific sectors, such as wind, solar, advanced small-scale nuclear, carbon capture and storage, smart grids, and energy efficiency. Countries and firms could have various strategic, trade, energy security, and business as well as environmental incentives to participate in such ventures, which can promise higher payoffs than go-it-alone strategies. Clubs could, for instance, include joint R&D and associated funding and intellectual property agreement programs, as well as coordinated strategies for commercial deployment. The Club members could reciprocally reduce or eliminate subsidies otherwise allowed under WTO, or channel fossil subsidies into subsidies for green alternatives.

A carbon capture and storage (CCS) technology Club may be one example. Even with aggressive development of renewables, China and India are projected to increase coal combustion on a massive scale. Here the United States and European Union have a significant advantage in terms of their knowledge base and storage options. China has advantages in terms of ability to manufacture and implement the needed technology cheaply, but currently lacks strong incentives to implement it domestically. A CCS Club, already incipient due to European Union-China joint demonstration projects, could speed development of the technology, address siting and storage issues, and provide expanded implementation in China, while allowing the European Union to share in credit for emissions reductions and in eventual profits from selling the technology (e.g., to the United States or Australia). These technology Clubs could participate in the nascent Climate Technology Center and Network (CTCN) that resulted from the Cancun Conference of the Parties.[50] The Clubs could act as sector-

50 Report of the Conference of the Parties on Its Sixteenth Session, Addendum, Part Two: Action Taken by the Conference of the Parties at Its Sixteenth Session, *Decision 1/CP.16: The Cancun Agreements: Outcome of the Work of the Ad*

specific nodes in the network, leading to information sharing on technology development and transfer across sectors.

Members of a Club could also cooperate in setting domestic energy and environmental performance standards to stimulate development and adoption of green technologies. For example, CCS technology exacts a large electric generation efficiency penalty, now about a third, where it is applied to pulverized coal combustion (the currently dominant technology). Higher efficiencies are feasible and could be encouraged, via incentives in the form of higher domestic standards for chemical sorbents used to remove CO_2 from the stack gas. Another example is air pollutant emissions and fuel efficiency in aviation, which are theoretically subject to regulation by the International Civil Aviation Authority (ICAO). Therefore, combustion efficiency in aviation could be improved by either focused attention at ICAO or, failing that, establishment of a parallel but separate standards regime for a smaller group of participants.[51] Aircraft firms located outside the European Union/United States might well envision a market-entry advantage in establishing such a parallel regime (although whether ICAO has primary jurisdictional competence would need to be determined). Coordination initiatives by Clubs might eventually be extended to include a greater range of companies and countries.

IV. Developing Effective Transnational BUS Regimes for Reducing GHG Emissions

Building BUS regimes that will secure participation and compliance by members and generate significant GHG reductions presents a series of challenges that we identify and address in this Part.

Hoc Working Group on Long-Term Cooperative Action Under the Convention, U.N. Doc. FCCC/CP/2010/7/Add.1, ¶ 117 (Mar. 15, 2011) [hereinafter *Cancun Agreements*].

51 The International Civil Aviation Authority (ICAO) was created by the Convention on Civil Aviation, Dec. 7, 1944, 15 U.N.T.S. 296 [hereinafter Chicago Convention], to regulate many aspects of international civil aviation, including navigation rules and infrastructure, flight inspection, accident investigation and various standards. ICAO has been given primary jurisdiction by the UNFCCC to establish mechanisms to mitigate emissions from airlines, and, as a part of ICAO's standard-setting mandate, is currently developing standards around aviation biofuels. However, ICAO has received considerable criticism over the slow pace of their climate mitigation work.

A. Designing and Implementing Incentive-Compatible Architectures for BUS Regimes

A critical issue is how to secure effective cooperation among relevant actors in the various specific fields where a BUS regime might be developed. Meeting this challenge requires two basic types of highly demanding analytic and empirical work, informed by rational choice theory and the lessons of international and transnational political economy. The first step is to understand the structure of incentives among potential players in a given field and determine whether it could support some form of transnational regulatory or financial cooperation that would produce climate benefits. The second is the design of institutional structures for cooperation in specific fields that will effectively mobilize those incentives and deliver climate benefits as well as non-climate benefits to the players to ensure their participation.

From a game theoretic perspective, most or all of the examples in the Part above involve elements of both coordination and cooperation games, in varying proportion. For example, harmonizing technical standards for green products and services has more on the coordination game end of the spectrum, although the distribution of costs and benefits among the players will be affected by the precise arrangements.

The circumstance and incentives of potential players must be identified in order to determine whether a constructive institutional fit can be established. In the case of potential regimes involving states, IGOs, firms and CSOs, the relative competencies of different types of actors and the potential for combining them through collaboration arrangements must be examined.[52] Certain public and private actors may be mobilized to act now by the prospect of gaining first-mover advantages in a regulatory field which they believe is likely to develop in the future by taking a pioneering leadership role in shaping to their advantage the development of relevant institutions and policies. Dominant firms, for example, might do this in the case of GHG regulation by inviting an agreement in a given sector — such as autos, aluminum or shipping — even if they would prefer to avoid any such regulation if they could.

The second step is to design and develop institutional arrangements that will secure cooperation in cases where there is a favorable structure of incentives among a group of players in a given field. Such arrangements must, of course, be based on the particular incentive structure and sector in question, and be framed in order to ensure participation and adherence by the player to the relevant norms of cooperation. These institutional arrangements are likely to be quite varied. Experience under existing multilateral and transnational regulatory regimes

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52 *See* Abbott & Snidel, *supra* note 7, at 46-53.

for environmental protection, trade, investment, and economic development should be studied for analogies and insights in prospecting and developing various specific BUS regimes.

Arrangements for monitoring, reporting and verification of program performance, as developed below, will be important in securing mutual confidence and compliance on the part of the participants. Global Administrative Law practices of transparency, participation, reason giving and review in the development and administration of regulatory and other transnational institutions may contribute to these goals.[53]

Even if favorable BUS incentive structures in specific fields are identified and institutional arrangements developed to mobilize those incentives, a variety of obstacles to the development of effective transnational BUS regimes will remain. These include the need to set an agenda, enlisting the interest of the key players, negotiating the arrangements, dealing with potential free-riding, and other barriers to securing participation and forming a well-functioning regulatory regime.[54] This Part outlines three steps to meet this challenge. First, concentrate initially on the most promising candidates for such regimes, ones where there are strong incentives and mutuality of interests among the potential participants. Second, use existing international organizations in the regulatory field and major country and regional clubs such as the MEF, G8 and APEC to sponsor and help organize regimes. Third, implement unilateral regulation by major countries of products and of instrumentalities of international commerce that can generate strong incentives for development of such regimes.

B. International Development Organizations and Major Country Clubs as Sponsors and Catalysts

Development-oriented IOs, including most notably MDBs, have incentives to adopt policies and channel resources to reduce energy costs as part of their development mission, thereby creating demand for energy-efficient goods and services and promoting more energy-efficient patterns of development. They may also adopt policies and channel resources with the primary objective of reducing GHGs for a number of reasons. First, professional elites within the MDBs may favor action to combat climate change. Second, recipient countries, concerned about climate adaptation, might support them if they contribute to their adaptation objectives, or if they bring an increase in development aid, or promise to reduce costly energy imports (a major concern in Egypt and China,

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53 Benedict Kingsbury, Nico Krisch & Richard B. Stewart, *The Emergence of Global Administrative Law*, 68 Law & Contemp. Probs. 15 (2005).

54 *See* Abbott & Snidel, *supra* note 7.

for example). Third, MEF governments may support or acquiesce to such IO initiatives because they potentially reduce the domestic burden of MEF nations to limit GHG reductions, correspondingly reduce demands from other states and environmental constituencies for mitigation, and secure economic benefits from MDB-subsidization of purchases by developing countries of MEF GHG-related goods and services.

The MEF and other international and regional clubs of major countries (e.g., G8, G8+5, G20, APEC) could help promote mutual adoption by member jurisdictions and their firms of transnational BUS regulatory initiatives. Driven by an impetus to secure economic benefits for domestic industry or other objectives such as energy security, MEF national cooperation might include programs for energy efficiency and renewable energy, or plurilateral initiatives, such as free trade agreements in green energy technologies. Unlike a GHG Treaty, such measures do not involve the major economic and political risks posed by binding economy-wide constraints on emissions and are reciprocal in character, easing competitiveness concerns.

IOs and global and regional clubs of major jurisdictions can accordingly play key BUS roles by generating specific initiatives and catalyzing and supporting initiatives by other governmental and nongovernmental actors.

C. National Regulation of Products and Instruments of International Commerce as Stimulus for Development of Transnational Regulatory Regimes

Another potential route to promoting the adoption of transnational BUS arrangements that will produce GHG limitations is adoption by one or more major MEF jurisdictions of GHG limitation standards (technology or performance) on products or instruments of international commerce (airplanes and ships). Initial adoption by one or a few major jurisdictions could produce, through domino effects, emulation by others and emergence of global arrangements for uniform regulatory standards in specific regulated sectors. This same strategy could be used with respect to energy efficiency standards, producing CO_2 reductions as a co-benefit.

In the case of products, imposition of standards by a jurisdiction that has a large percentage of the global market for the product may lead manufacturers to conform their products globally to the standard, to increase economies of scale.[55] This is the California or Brussels Effect.[56] Such initiatives may also

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55 *See* Barrett, *supra* note 8 (discussing MARPOL strategy for pollution control from ships).

56 *See* David Vogel, The Market for Virtue: The Potential and Limits of Corporate

lead other jurisdictions to adopt the same or even higher standards ("race to the top") for reasons of global competitiveness. This logic seems to have been at work in the recent adoption by the United States (with the support of U.S. auto manufacturers) and by China of more stringent fuel economy standards. Firms in domestic regulated sectors subject to stiffer requirements will have strong incentives to achieve harmonization of regulatory standards through a transnational regulatory regime involving some participation by major jurisdiction regulatory authorities and the firms.

The same dynamic of national standards leading to more stringent standards globally could be seen in shipping (e.g., standards by major coastal and port states) or aviation (e.g., standards by jurisdictions with a high volume of air traffic).[57] The European Union is currently seeking to achieve such a result by imposing its CO_2 Emissions Trading Scheme (ETS) regulations on all (European and foreign) airlines that serve European airports.[58] While foreign carriers have now drawn a reluctant ICAO into the dispute, ICAO is an excellent institutional base for a transnational regulatory regime that would adopt uniform global standards for the aviation sector. A similar logic could play out if one or a few major port/trading jurisdictions adopted fuel efficiency or air pollution emissions regulations for ships; the International Maritime Organization (IMO) could serve as the institutional base for global regulatory standards in the international shipping sector.

The contributions of such strategies could potentially be very substantial, yet would be no substitute for a GHG Pact. The great bulk of GHG emissions arise from power plants, industrial sources, forestry and agriculture, and other PPMs. Even if global energy efficiency and/or GHG standards for major emitting products and ships and planes were eventually to emerge from domestic regulatory initiatives by major jurisdictions — such a strategy presents substantial risks to the first movers — the GHG emissions that would be covered would be a relatively small percentage of the total. Nonetheless,

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Social Responsibility (2005); Anu Bradford, *The Brussels Effect*, 107 Nw. U. L. Rev. 1 (2012).

57 *See* Barrett, *supra* note 8, at 94, 264.

58 The EU ETS Aviation Directive, which came into force January 1, 2012, but will not be implemented until 2013, requires all carriers landing at a European airport (except for small carriers with very few daily flights) to surrender EU ETS permits for the emissions from the full length of the incoming or outgoing flight. Foreign carriers, and governments, are arguing that it should only be on the portion within E.U. airspace, *see* Directive 2008/101 of the European Parliament and of the Council, of 19 November 2008 Amending Directive 2003/87/EC so as to Include Aviation Activities in the Scheme for Greenhouse Gas Emission Allowance Trading Within the Community, 2009 O.J. (L 8) (EC).

such initiatives would represent an important element in a BUS and help make a comprehensive GHG Pact more likely.

V. BUS Regime Monitoring and Reporting and Linkage to UNFCCC

In order for BUS to constitute a *strategy*, it must consist of more than simply "letting a thousand flowers bloom" in hopes that myriad decentralized efforts will make significant progress in reducing GHGs at lower cost and thereby pave the way for development of a GHG Pact. There will need to be a degree of coherence and coordination among the different BUS regimes that allows them to be more than the sum of their parts. Obviously, a bottom-up system will not have an overarching treaty or institution with authority to coordinate the several disparate regimes. Furthermore, each regime will have to monitor the compliance of its members with the terms of cooperation as well as the performance of the regime in achieving the common goals. In addition, it would be desirable to encourage the several BUS regimes to measure and report, to the extent feasible, the GHG reductions achieved by their activities. This practice could be encouraged, and a looser form of coordination may be achieved, by promoting harmonized methods for monitoring, reporting, and verification (MRV) and reporting by BUS regimes of the GHG reductions that they achieve. This would allow for comparison of the GHG emissions limitations achieved in different BUS regimes and sectors, and the incorporation of BUS reports into the UNFCCC GHG reporting system, thereby creating an institutional platform for mutually beneficial interchange and cooperation among different BUS regimes as well as highlighting their contributions to mitigation.

In this Part, we first discuss monitoring and reporting of internal regime compliance and performance and, where possible, MRV for GHG reductions achieved. We then address how the various BUS regimes could be linked through a global GHG MRV program, and potential linkage with the UNFCCC reporting systems.

A. BUS Monitoring and Reporting Mechanisms for Participant and Regime Performance

Essential to the effective operation of the various transnational BUS programs will be some form of monitoring and reporting system for each program. These systems should track the performance of the program participants and the program itself to evaluate the effectiveness of different initiatives

and strategies. While the most immediate use of this information will be internal, in many cases regimes will find it desirable to report this information externally, in order, for example, to promote diffusion of innovations in the sector, stimulate demand for products and services developed by the regime, create reputational and other pressures for member compliance, and generate incentives for more ambitious undertakings by participating countries, regulatory bodies and firms. However, in some cases, for example in the early stages of R&D programs, external reporting will be contrary to the objectives of the regimes and the incentives of its members.

With regard to participant performance, some programs may involve legally binding regulatory requirements, such as limitations on aircraft CO_2 emissions or fuel efficiency standards that might be adopted by ICAO under the Chicago Convention.[59] In this instance, monitoring and reporting systems would track regulatory compliance by airline firms. In other cases, regulatory norms (e.g., energy efficiency in aluminum production, harmonization of technical standards for energy-efficient or low-GHG products and services, or reductions in regional non-CO_2 air pollutants) will likely not be legally binding. In those cases, monitoring and reporting will be needed to track and report the performance of regime actors (e.g., firms, standards-setting bodies, domestic regulatory agencies and other participants) consistently and comparably.

The metrics for measuring participant performance will vary depending on the activity covered by the regime and its regulatory norms. The metrics should be structured to measure both progress towards agreed-upon goals (e.g., aggregate reductions in energy usage in aluminum production; increased trade in efficient or low-GHG products and services; aggregate reductions in regional non-CO_2 air pollutants) as well as resulting reductions in GHG emissions. To the extent that economic and other private benefits can be revealed and tracked, this may help to cement and expand regime participation. Finally, in the absence of regulatory enforcement authorities and mechanisms, robust monitoring and reporting arrangements will draw on Global Administrative Law principles of transparency, participation and review to create incentives and pressures to promote compliance.

B. Creating a Global BUS Structure Through an Umbrella GHG MRV Regime

Establishing some new global authority to supervise and coordinate the various BUS components would be unrealistic. But it would, we believe, be desirable to establish institutional arrangements — a BUS GHG MRV network — to

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59 *See* Chicago Convention, *supra* note 51.

encourage and support MRV by BUS regimes of their GHG emissions for submission through the UNFCCC reporting system. Giving that task initially to a UNFCCC body would be undesirable for a variety of reasons. A separate regime has the ability, unlike the UNFCCC, to involve subnational actors (i.e., firms, U.S. states, CSOs) that have little or no role within the UNFCCC. Involving actors beyond national governments is important because, as exemplified in the U.S. case, the lack of a national policy would inhibit effective actions via the UNFCCC, whereas a BUS strategy can mobilize efforts by subnational jurisdictions and non-state actors. Furthermore, the linking of other treaty regimes, including the Convention on Long-Range Transboundary Air Pollution and Montreal Protocol, might occur more easily via a new MRV institution. A more promising, and nimble, structure would be to establish an umbrella MRV arrangement, where the outputs of the various BUS MRV systems were aggregated to allow global comparison of emissions reductions.

The minimum requirement is a system for tracking GHG emissions benefits from each BUS regime and the ability to compare them. In addition to the methodologies and business-as-usual (BAU) baselines required for each BUS regime, such a system will require common metrics for comparing emissions/reductions across sectors. Important for measuring international progress will be compatibility between data outputs from the various MRV systems for the different BUS regimes. While the BUS regimes will be different in terms of rationale, geographic coverage, industry coverage and type of goal, if data outputs can be standardized, then greater cross-sectoral comparison can be achieved.

A global BUS GHG MRV network linking the various BUS programs could have a number of institutional and governance forms. For example, it could be created jointly by the separate BUS regimes, which would have a role in its governance — a BUS Club.[60] Its activities may naturally evolve beyond MRV to related activities to develop and support the several BUS programs. The club may begin with a small number of sufficiently mature BUS MRV regimes, and then expand as other regimes mature. The initial club regimes would have significant influence in establishing a BUS GHG MRV standard. A BUS club might also be established by a number of existing entities (e.g., World Bank, UNDP, ISO, and representatives of key MEF and subnational jurisdictions) simultaneously with the development of BUS programs, with the goal of encouraging and supporting their development through an umbrella MRV scheme and other activities.

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60 *See supra* Part III.

C. Linking BUS GHG MRV to the UNFCCC

As a second step, additional benefits would be achieved by linking, with the help of the Club or other BUS network arrangement, the GHG MRV outputs of the various BUS regimes with the UNFCCC reporting system, whereby complementarity and mutual support can be achieved. Enunciating and promoting a BUS, where targets or actions are less inclusive or ambitious than those sought by the UNFCCC, will be criticized as abandonment of both multilateralism and the UNFCCC process. Many developing countries already criticize bilateral and plurilateral GHG reduction initiatives as a means for developed countries to avoid their responsibilities for causing climate change, their UNFCCC mitigation responsibilities, and their obligation to involve developing countries in decisions and actions that affect them by use of the inclusive multilateral UNFCCC process.[61] Linking BUS regimes to the UNFCCC process, in a way that respects the need for multilateralism in addressing the global character and consequences of climate change, may help defuse these criticisms.

MRV provides a prime opportunity either for formal linkage with the UNFCCC reporting systems or informal incorporation of the BUS regime GHG reporting outputs in UNFCCC reports. Country UNFCCC reports under the emerging systems of International Consultation and Analysis (ICA) for developing countries and International Assessment and Review (IAR) for developed countries could draw on the methodologies and information generated by these BUS regime MRV arrangements and engage BUS MRV experts in UNFCCC MRV design and review or reports.

Under the UNFCCC and the Kyoto Protocol, Annex I countries have been required to report their GHG inventories annually. These reports, and the less frequent National Communications, are reviewed by an expert review team, consisting of both developed and developing country experts and organized by the UNFCCC secretariat.[62] At present, while developing countries are to report in National Communications (every four years), there has been no review or verification process for the information contained in those reports.[63]

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61 *See* Philip Rucker & Juliet Eilperin, *Obama Sets International Climate Change Forum*, Wash. Post, Mar. 28, 2009, http://voices.washingtonpost.com/44/2009/03/28/obama_sets_international_clima.html.

62 These expert review reports are made public (fully for the National Communications; partially for the GHG inventories), and where a country is a party to the Kyoto Protocol, reports that detail noncompliance with commitments may be sent to the Kyoto Protocol Compliance Committee.

63 Hilary McMahon et al., *Q&A: Transparency in the Cancun Agreements*, World Resources Institute (Jan. 13, 2011), http://www.wri.org/stories/2011/01/qa-

As a part of the bargain struck in the Cancun Accords,[64] developing country National Communications will be subject to ICA, while Annex I GHG inventories and National Communications will be subject to a stricter IAR.[65] These new reporting regimes were envisioned to be more robust than those they were replacing, but still exhibit considerable weaknesses.[66] Details about the functioning of ICA and IAR remain to be worked out. It is possible that through the engagement of BUS reporting mechanisms in the UNFCCC reporting process, the latter will be made more robust. Such beneficial engagement could happen in technical verification,[67] international consultation/review,[68] or further consideration of the output[69] stages of the UNFCCC reporting regime.

There are significant reasons to think that either a formal or an informal link between BUS regimes and UNFCCC reporting could be workable and beneficial. First, there are strong incentives for developed and developing countries, firms, and other entities participating in BUS regimes to support

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transparency-cancun-agreements.

64 *Cancun Agreements*, *supra* note 50.

65 McMahon et al., *supra* note 63.

66 The weaknesses center on the limited potential for engagement of experts and non-state actors in the reporting and review process, and the insufficiency and lack of comparability of data required of state reports, Jennifer Morgan & Edward Cameron, *Reflections on COP in Durban*, World Resources Institute (Dec. 16, 2011), http://insights.wri.org/news/2011/12/reflections-cop-17-durban.

67 The initial stage of both ICA and IAR will be a technical verification by expert review teams of information contained in the National Communications or GHG inventories, similar to that which happens now for developed countries. This stage provides two opportunities for BUS engagement. First, BUS regime data may be used in the preparation of National Communications and GHG inventories. Second, BUS MRV experts, from the reviewed or an outside country, may lend their expertise either to design reporting standards for relevant sectors, or to participate in the Expert Review Teams

68 This stage consists of consultations and reviews of the expert reports generated in the technical review stage; participation will currently be limited to states, but could potentially extend to broader stakeholders after a planned review of ICA/IAR.

69 Expert reports, and potentially the outcome of IC/R, may be further reviewed by UNFCCC entities (e.g., Compliance Committee, Subsidiary Body on Implementation). More interestingly, it would be possible for these outputs to be sent back to the BUS regimes and Club or other umbrella arrangement for review, with subsequent modification of either the substantive or the reporting regime. This feedback loop would lead to greater legitimacy for the BUS, but also potentially for the UNFCCC, as it would provide concrete examples of developed state actions.

linking in order to claim credit in the UNFCCC for their BUS sector reductions. Developed countries will include BUS programs in their reduction plans, and the reductions achieved through them in their GHG emissions reductions reports. Developing countries would be likely to include any BUS regimes in their Nationally-Appropriate Mitigation Actions (NAMAs) and thus in their National Communications. Second, the UNFCCC Secretariat, the reporting regime, and expert communities would likely support linking. Having BUS MRV experts would increase the accuracy of country reports and, where included in Expert Review Teams, provide increased monitoring ability and decrease resource demands on the UNFCCC. Where BUS regime reporting is robust, it may stimulate improvements in outside country reports through improved methodologies and standards and increased comparability. Correspondingly, the UNFCCC country reports process could have positive feedback effects on the quality of BUS reporting. Linking could also reduce overall transaction costs.

Linkage, however, will raise a number of problems that will need to be addressed. A notable challenge will be differences in the reporting requirements and standards both among the BUS regimes and between them and the two UNFCCC reporting regimes. There will likely be differences in reporting coverage (e.g., state actions only, or including wholly private/CSO actions), categories (e.g., mitigation actions, policies and programs), accounting rules (e.g., base years, permanence, allocation of credit for international offsets and other forms of climate finance), and general MRV program quality. However, these differences may be ameliorated by concerted effort in the design of the BUS reporting requirement to correspond with ICA and IAR requirements, which will likely predate BUS standards.

There is also the further issue that many BUS programs would likely be uniform for all participants, including both developed and developing countries and their firms, while there will be significant differences between differences between the ICA and IAR MRV standards under the UNFCCC. However, there should be strong incentives on the part of countries and other BUS program participants to harmonize the program reporting regimes with those of the UNFCCC; this process would also tend to harmonize the different BUS MRV programs with each other.

Conclusion

Notwithstanding the adoption of the Durban Platform, there remain serious obstacles to achieving a GHG Treaty with participation by all major emitting countries, developed and developing, significant binding GHG reductions commitments, and adequate compliance assurances. A new strategy, beyond

the UNFCCC lawyer/diplomat process, is needed to address these obstacles and realize the promise of Durban. The bottom-up strategy can mobilize and harness the diverse incentives and energies of all levels of government, of firms, and of other nongovernmental actors to undertake actions that will have the effect, if not in many cases the purpose, of reducing GHGs. In this way, it can bypass the political blockages and lack of leadership in the national governments of the biggest emitting countries in order to make progress in mitigation and build networks of trust. In doing so, it can help change political and economic conditions and outlooks and build transnational and domestic constituencies in ways that will make an effective international climate treaty more achievable.

Researchers and analysts can make important contributions to this enterprise by examining the incentives of relevant actors to undertake actions in specific sectors and fields that have climate co-benefits, the opportunities for developing policies and institutions to mobilize those incentives, and the design of the most appropriate and effective institutional arrangements. A hardheaded focus on political economy considerations and public choice dynamics in the specific context of each different BUS field and group of actors is essential.