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BUILDING INTERNATIONAL CLIMATE COOPERATION

*Lessons from the weapons and trade regimes
for achieving international climate goals*

RUTH GREENSPAN BELL, MICAH S. ZIEGLER,
BARRY BLECHMAN, BRIAN FINLAY, THOMAS COTTIER

Edited by Ruth Greenspan Bell and Micah S. Ziegler

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ABOUT WRI

The World Resources Institute (WRI) is a global environmental and development think tank that goes beyond research to create practical ways to protect the Earth and improve people's lives. We work with governments, companies, and civil society to build practical solutions to urgent environmental challenges. WRI's transformative ideas protect the Earth and promote development because sustainability is essential to meeting human needs and fulfilling human aspirations for the future.

FOREWORD

The increasing pace of climate change, and society's heretofore insufficient attempts to reduce our impact on the climate, challenges us to develop new ideas about how to reduce greenhouse gas emissions and adapt to rapid change. The causes of climate change are clear, and its impacts—from rising sea levels to melting glaciers to disappearing forests—are widespread. Climate change is a global concern still in need of global ambition and action.

In Durban, South Africa, in December 2011, 195 countries agreed to another round of climate negotiations. This process opens a window for fresh thinking about how to increase the ambition in tackling climate change. While work will continue toward a unifying agreement in the United Nations Framework Convention on Climate Change (UNFCCC), prudence suggests also investigating new ideas and additional forums. This report adds to the growing body of research that offers approaches toward this objective.

In *Building International Climate Cooperation*, the World Resources Institute (WRI) adds to the literature by spotlighting what climate negotiators might learn from colleagues working in two other arenas for many decades: control of weapons of mass destruction and economic relations such as trade and investment. Ruth Greenspan Bell and Micah S. Ziegler of WRI dig into these fields and other sources to consider what might be applicable in the climate negotiations given their unique history. Bell's and Ziegler's overview focuses first on building trust and means of verification. Their analysis leads them to explore broader lessons, such as ways of making progress when major players stall and the potential for decoupling issues or assigning them to other bodies.

Complementing and providing background for the overview are papers written from the point of view of experts in weapons control and economic law. These experts start from their knowledge of negotiations in their arenas and apply their experience to the



challenge of climate change. A paper by Barry Blechman and Brian Finlay of the Stimson Center in Washington, D.C., examines how incremental progress on controlling nuclear weapons was made in a range of forums. A second paper by Thomas Cottier of the World Trade Institute in Bern, Switzerland, outlines the many elements of law and institutions governing trade and other economic issues at the global, regional, and bilateral levels. He notes that economic law is based on reciprocity balancing concessions and commitments. It has been most successful using bottom-up processes and building consensus on package deals.

We hope that this report will inform and stimulate further dialogue on additional pathways toward the existential imperative of capping and reducing global greenhouse gases. Some focus, naturally, will be on the UNFCCC process itself. However, we should not limit ourselves to only one forum.

A handwritten signature in black ink that reads "Manish Bapna" followed by a horizontal line.

Manish Bapna
Interim President
World Resources Institute

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ABOUT THIS REPORT

Tackling global climate change requires countries across the world to engage in multigenerational cooperation (referred to herein as “collective action”) to advance a transition to a near-zero-carbon economy by 2050, in order to keep global average temperature increase below 1.5–2 degrees Celsius in comparison with preindustrial levels. No one country can achieve the necessary emissions reductions alone. If we are to succeed, there must be sustained political engagement across countries to solve difficult conflicts, such as the level of effort versus cost, or equity versus environmental rigor. Issues where agreement is needed include:

- Targets, timetables, and actions for reduction—who does what, by when, and how?
- Common standards for measuring emissions—what standards, who uses them, and when?
- Robust mechanisms to verify the implementation of national actions—what, who, when, and how?

What might negotiators in the third decade of building collective action to address climate change learn from the experience of negotiators who manage other problems that by their nature require global action? This report contributes to this question by examining two such negotiating areas where considerable experience has been gained in devising agreements and institutions. The first is control of weapons of mass destruction, a field relatively unknown in the climate change world. The second, multinational economic arrangements, is more familiar ground but an area that warrants deeper examination. Although such arrangements have not “solved” weapons or economic challenges, notable progress has been made since the middle of the 20th century, and thus these arrangements offer valuable insights for climate negotiators.

What is the focus of the three papers that constitute this report?

This report comprises three papers. The first paper draws on the other two to explore whether a deeper understanding of how progress has been achieved incrementally in limiting nuclear dangers and developing economic law and relations might help in tackling climate change. Authors Ruth Greenspan Bell and Micah S. Ziegler of the World Resources Institute focus first on the role of verification in building trust and confidence among countries and then analyze a series of broader questions, such as the value of a comprehensive vision and “grand bargain,” the role of informal groups, and the challenge of graduation. Their analysis mines experience in developing the weapons and economic agreements for ideas and takes a first cut at how they might be applied to the climate regime, drawing on the two companion papers in Chapters 2 and 3.

These companion papers come from the perspective of experts in weapons control and economic law and institutions. Barry Blechman, co-founder of the Stimson Center in Washington, D.C., and Brian Finlay, director of the Stimson Center’s Managing Across Boundaries program, look at what climate control negotiators can learn from efforts to limit nuclear dangers. The authors focus primarily on nuclear weapons agreements but also discuss chemical and biological weapons. The authors explore the nature of agreements—formal/informal, bilateral/multilateral, for example—techniques and practices used in verification, and incentives developed to encourage countries to participate.

Blechman and Finlay suggest that it may be worth testing a variety of nimbler negotiating vehicles supplementing the UNFCCC and disentangling goals for emissions reductions from debates about legal structures and venues. The large docket of issues currently contained in the UNFCCC negotiations could be broken up, narrowing specific negotiations by issue or region, by greenhouse gas emissions contribution, or by tools and methods to achieve greenhouse gas reductions. The authors also note in regard to concerns about ratification, or even temporary disengagement, that coun-

tries have often followed the rules set in agreements they once shunned, even as they avoid the formalities. Finally, the authors note the value of engaging more powerful ministries, which can make commitments and sell them at home more persuasively than environment officials, in the resolution of climate change talks.

Thomas Cottier, professor at the University of Bern, Switzerland, and managing director of the World Trade Institute, examines the experience of economic law and relations to identify potential avenues that could be effective in addressing climate change mitigation and adaptation. Cottier first describes the complex architecture that has developed in the economic arena—informal groupings such as the G-8 and G-20, top-down organizations like the International Monetary Fund (IMF) and the World Bank, bottom-up bilateral and regional initiatives, and a wide range of intermediate organizations including the World Trade Organization (WTO) and the International Labour Organization. The author notes the differences in participation and membership as well as how decisions are made, disputes settled, and agreements monitored. He warns against “unduly centralized top-down solutions” and instead suggests addressing the problem in terms of “multilevel governance.” He indicates that the climate arena could learn from the economic regimes’ concepts of “the package deal, critical mass, gradual consensus building in concentric circles, graduation, and open-ended negotiations within a constitutional framework subject to dispute settlement designed to serve multilevel governance” and that reporting, naming, and shaming could be “particularly important” if effective legal dispute resolution is unreachable.

How was the research conducted?

To consider what fields might offer ideas to enhance or improve the climate regime, WRI initiated a research process in the fall of 2009 with the help of ClimateWorks, a foundation that supports public policies designed to prevent dangerous climate change and promote global prosperity.

As a first step, WRI convened a workshop of distinguished experts^a from the fields of weapons, human rights, international economic relations, and the broader world of environmental agreements, as well as some who work on the technical parts of verification such as remote sensing. The purpose was to consider which fields offered the best examples from which to extract ideas that might enhance or improve the climate regime. A day-long discussion allowed a preliminary review of the strengths and weaknesses of these other regimes and some initial comparisons with the needs of climate negotiators.

Meeting participants agreed that an extensive literature on the now more than 1,000¹ international environmental agreements² is already available. Further analysis of these agreements, the participants concluded, was unlikely to add much to knowledge already available to climate negotiations. Although analysis of many regimes in other fields might be useful to climate negotiators, continuing conversations eventually narrowed the inquiry to weapons and trade.

WRI asked Barry Blechman and Brian Finlay of the Stimson Center and Thomas Cottier of the World Trade Institute to write papers that looked across their fields for examples to inform the climate regime. They were asked to consider broad questions that all three fields have faced, such as: What makes a successful process and what can lead to failure? How can agreement be achieved? How can action toward an international goal be encouraged? Who are the relevant actors and how can they be engaged? How can monitoring and verification be negotiated and implemented?

What differentiates this report from previous inquiries on this topic?

Examination of other regimes to shed light on climate challenges is not entirely new. The climate negotiating community has looked

a. Chris Barnet, Kevin Baumert, Ruth Greenspan Bell, Rob Bradley, Clare Breidenich, Sue Esserman, Leon Fuerth, Mitch Goldberg, Paul Joffe, Homi Kharas, Jonathan Lash, Christian Layke, Michael A. Levi, Remi Moncel, Jennifer Morgan, John Steinbruner, Patricia Wald, Edith Brown Weiss, Jacob Werksman, and Micah S. Ziegler.

elsewhere for verification, compliance, and other tools, with particular attention to trade agreements and to the Montreal Protocol on Substances that Deplete the Ozone Layer. Over the history of the UNFCCC negotiations, climate scholars and negotiators were profoundly influenced by the Montreal Protocol. Provisions in its Multilateral Fund for Implementation helped developing countries to phase out their use of ozone-depleting substances. The Protocol's success in assisting developing countries through this transition was highly influential in thinking on how to manage greenhouse gases. Similarly, the World Trade Organization has been examined for how it has handled reporting and compliance.³ Likewise, it is not new to reflect on additional interactions that can speed progress toward the ambitious goal inherent in addressing climate change. To improve the opportunities for progress in this complex venture, several academics have examined a wider variety of approaches outside the UNFCCC and have looked to other international treaty regimes for their lessons and experience.⁴

There are several aspects that distinguish WRI's inquiry. First is the choice of including weapons agreements as a potential source of relevant experience. While not a perfect analog, the weapons area presents some intriguingly similar issues of fundamental national interests and conventional thinking about sovereignty that were overcome. Second is the emphasis on understanding the history and events that birthed particular tools and the dynamics that allowed for agreement on restrictions on national policy.

What are the limitations of comparing different regimes?

Lessons from one set of efforts to manage multilateral challenges cannot literally be transferred on a one-for-one basis to another, and comparisons between efforts to control widely varying global challenges should be made very carefully. All regimes and agreements have their own history, culture and unique characteristics and are designed to manage problems with unique attributes. In the course of negotiations, each global negotiation develops its own "language" and forms of communication and interaction that can be barriers to considering ideas from different communities.

The climate and weapons agreements are similar in that they are designed to prevent existential threats. On the other hand, the dynamic or series of incentives for economic cooperation and especially trade aims to share incremental benefits and is designed as an opt-in incentive that has worked well to prevent trade wars and resolve disputes.^b

Climate change may be unique among not only environmental but also other forms of global agreement, in that efforts to address it must reach deep into the economy and the daily life of virtually every country on Earth. Weapons agreements focus on particular arsenals and arms configurations, and even international economic law manages particular market access and conditions of competition.

b. There are parts of the trade regime that, similar to climate change dynamics, control animal and plant diseases and aim to prevent global disease epidemics.

NOTES

1. Edith Brown Weiss. "Understanding Compliance with International Environmental Agreements: The Baker's Dozen Myths." *University of Richmond Law Review* 32 (1999): 1555.
2. David G. Victor, Kal Raustiala, and Eugene B. Skolnikoff, eds. *The Implementation and Effectiveness of International Environmental Commitments: Theory and Practice*, Global Environmental Accord: Strategies for Sustainability and Institutional Innovation (Cambridge, MA: International Institute for Applied Systems Analysis, The MIT Press, 1998). <http://mitpress.mit.edu/catalog/item/default.asp?tid=7048&ttype=2>; Edith Brown Weiss and Harold K. Jacobson, *Engaging Countries: Strengthening Compliance with International Environmental Accords* (Cambridge, MA: MIT Press, 1998); Abram Chayes and Antonia Handler Chayes, *The New Sovereignty: Compliance with International Regulatory Agreements* (Cambridge, MA: Harvard University Press, 1998).
3. Scott Barrett. "Climate Change and International Trade: Lessons on Their Linkage from International Environmental Agreements." Background paper prepared for "Thinking Ahead on International Trade (TAIT)—2nd Conference on Climate Change, Trade and Competitiveness: Issues for the WTO" (The Graduate Institute, Centre for Trade and Economic Integration, June 10, 2010), http://www.wto.org/english/res_e/reser_e/climate_jun10_e/background_paper6_e.pdf.
4. Daniel Bodansky and Elliot Diringer, *The Evolution of Multilateral Regimes: Implications for Climate Change*. Advancing the International Effort Against Climate Change (Arlington, VA: Pew Center on Global Climate Change, December 2010), <http://www.pewclimate.org/publications/report/evolution-multilateral-regimes-implications-climate-change>; Robert O. Keohane and David G. Victor, *The Regime Complex for Climate Change*, Discussion Paper, The Harvard Project on Climate Agreements Discussion Paper Series (Cambridge, MA: Harvard Project on International Climate Agreements, Belfer Center for Science and International Affairs, Harvard Kennedy School, January 2010), http://belfercenter.ksg.harvard.edu/publication/19880/regime_complex_for_climate_change.html; Arunabha Ghosh and Ngairé Woods, "Governing Climate Change: Lessons from Other Governance Regimes," in *The Economics and Politics of Climate Change*, by Dieter Helm and Cameron Hepburn (New York: Oxford University Press, 2009), 454–476; Katherine Michonski and Michael A. Levi, "Harnessing International Institutions to Address Climate Change." Working paper (New York: Council on Foreign Relations, March 2010), <http://www.cfr.org/climate-change/harnessing-international-institutions-address-climate-change/p21609>.

LIST OF ABBREVIATIONS AND ACRONYMS

BWC	Biological Weapons Convention
CDM	Clean Development Mechanism
COP	Conference of Parties
CTBT	Comprehensive Nuclear-Test-Ban Treaty
CTBTO	Comprehensive Nuclear-Test-Ban Treaty Organization
CTR	Cooperative Threat Reduction
CWC	Chemical Weapons Convention
DSB	dispute settlement body
E.U.	European Union
FAO	Food and Agriculture Organization of the United Nations
FSU	former Soviet Union
GATS	General Agreement on Trade in Services
GATT	General Agreement on Tariffs and Trade
GDP	gross domestic product
GHG	greenhouse gas
HEU	highly enriched uranium
HFC	hydrofluorocarbon
IAEA	International Atomic Energy Agency
ILO	International Labour Organization
IMF	International Monetary Fund
INF	intermediate-range nuclear forces
IPCC	Intergovernmental Panel on Climate Change
LTBT	Limited Test Ban Treaty
MEF	Major Economies Forum on Energy and Climate
MFN	most-favored nation
MRV	measurement, reporting, and verification
NAALC	North American Agreement on Labor Cooperation
NAFTA	North American Free Trade Agreement
NEW START	(new) Strategic Arms Reduction Treaty
NPT	Treaty on the Non-Proliferation of Nuclear Weapons
NSG	Nuclear Suppliers Group
NWS	nuclear weapon states
PSI	Proliferation Security Initiative
REDD	Reduced emissions from deforestation and degradation



SALT	Interim Agreement on Offensive Arms
START I	Strategic Arms Reduction Treaty
TPRB	Trade Policy Review Body
TPRM	Trade Policy review Mechanism
TRIPS	Agreement on Trade-Related Aspects of Intellectual Property Rights
U.N.	United Nations
UNFCCC	U.N. Framework Convention on Climate Change
UNCTAD	U.N. Conference on Trade and Development
U.S.	United States
U.S.S.R.	Union of Soviet Socialist Republics
WIPO	World Intellectual Property Organization
WMD	weapons of mass destruction
WRI	World Resources Institute
WTO	World Trade Organization

Chapter 1

LESSONS FROM THE WEAPONS AND TRADE REGIMES FOR ACHIEVING INTERNATIONAL CLIMATE GOALS

Ruth Greenspan Bell and Micah S. Ziegler

Executive Summary

When countries join to address global climate change, they must consider a broader array of issues than in most multinational regimes. This is not surprising, in view of the challenges of moving disparate economies beyond their dependence on fossil fuels, while managing a raft of related and very sensitive issues.

This necessary experiment requires countries to address their coal and oil consumption, disappearing forests, novel stresses affecting agriculture and disease, and assistance for those sectors and people that will be hardest hit by the changes, among other issues. Each of these issues constitutes an unusual test of human problem-solving skills on its own.

Although climate change raises a daunting number of interconnected sets of issues, collective efforts to stabilize and reduce emissions dramatically are not the first time the world has tackled complex challenges that by their nature require multinational arrangements.

The upcoming 20th anniversary of the UNFCCC, coupled with growing evidence of dangerous anthropogenic interference with the global climate system, provides an important moment to reflect. Building on the analysis of Barry Blechman and Brian Finlay of the Stimson Center and Thomas Cottier of the World Trade Institute in Chapters 2 and 3, this chapter considers lessons from the weapons and trade regimes, noting both their successes and failures. It compares these lessons to what has been tried in the climate regime, and offers ideas that might enhance the chances of attaining global action to control greenhouse gas (GHG) emissions.

Our objective is to harvest lessons and thus provide food for thought for the continuing evolution of efforts to manage the huge challenge at hand of combating climate change. Some experiences under the weapons and trade regimes already have their parallel in the history of climate negotiations, with varying degrees of success; others may stimulate new approaches. In any complex endeavor nothing need be set in stone, and even revisiting ideas once considered unimaginable can stimulate fresh responses. Our hope is to stimulate a conversation, suggest lines for future research and inquiry, and contribute to building an effective set of responses to the climate change challenge.

Summary of Key Lessons and Observations

Mutual trust and verification

A review of the three regimes demonstrates the critical importance of trust when nations engage in formal processes of collective problem solving. It also demonstrates the complex way in which trust is developed, not only through actual verification of what each party does, but also from the level of mutual confidence that can develop out of extended and positive interactions, with growing levels of agreement.

Where trust has developed, countries have often agreed to be held to account in ways that might historically have been seen

to encroach on core elements of sovereignty. As experience and mutual confidence have grown, concessions have deepened to a degree that might have previously seemed unthinkable. For example, decades ago it was unimaginable that U.S. and Russian inspectors actually would peer into each other's missile silos with radiation detectors to count warheads, as they do today.

Robust reporting and verification systems allow countries to ensure that their counterparts are meeting their respective commitments and are part of a process that helps build trust over time. Building such reciprocal arrangements is a complex process, with no clear or universal formula. Yet some key lessons emerged:

- **Verification procedures can become more stringent over time.** Experience from trade and arms control agreements suggests that verification procedures in the climate regime could evolve toward greater scrutiny and deeper engagement as countries build mutual trust through successive interactions and a series of incremental steps over the years.
- **Formal complaint procedures and sanctions play an important role in motivating countries to meet commitments.** The existence of a formal complaint procedure and dispute settlement body (DSB) in the trade regime has encouraged countries to fulfill their commitments. It has also encouraged some processes for more informal and amicable resolution of international disagreements.
- **Clear benefits of international cooperation can lead countries to engage with a regime and, in the process, agree to verification procedures or forgo some aspects of their sovereignty.** A factor that arguably eases countries' acceptance of some restrictions on their sovereignty, as they assess the pros and cons of participation, is that benefits of international cooperation are apparent—for example, nuclear safety and economic prosperity. Governments in the trade regime found domestic benefits to collecting economic data to meet their international verification obligations. In the weapons regime, under-resourced

countries could be persuaded to collect data for compliance with biological weapons obligations when it enhanced their ability to track domestic diseases. Dual uses of information can encourage countries to agree to international provisions.

- **Verification can take the form of unilateral and multilateral processes operating in parallel.** In both the trade and arms regimes, a number of verification efforts have evolved over time on different levels: bilateral, plurilateral, governmental, and nongovernmental. The word *plurilateral* refers to WTO agreements that apply to less than the full WTO membership; whereas the word *multilateral* refers to WTO agreements that apply to all members.

Other important lessons

While the main focus of this paper is to harvest lessons on trust and verification, our analysis revealed additional elements that warrant serious consideration by global climate negotiators. These lessons cannot easily be separated from those outlined above. For example, the ability to move forward on bigger challenges may be directly related to experiences of starting small, decoupling issues, or, as in the case of two major bodies established to manage weapons monitoring, demonstrating effectiveness so that participants in the regime are more willing to take next steps.

- **Progress can be made even when major players stall or sit on the sidelines.** The history of arms negotiations shows that major powers may hold themselves outside agreements for many years but join later, once regimes have shown their capacity for effectiveness. In other instances, countries may follow global norms set out in agreements even without the formalities of treaty ratification.
- **Progress is not solely conditioned by legal form.** A fully ratified instrument is not always a necessary prerequisite to success. The study of the weapons and trade regimes suggest that it is possible to achieve substantive outcomes and build both mutual trust and increasingly robust verification processes,

even before countries reach a formal, ratified agreement. These more limited agreements can in practice bring results and, in some circumstances, might be more practically attainable than a comprehensive, broad, and deep regime. Needless to say, there are pros and cons to such an approach, and it is worth examining whether this process of informal agreement and accretion of de facto commitments can contribute significantly to the control of greenhouse gases.

- **Decoupling issues and outsourcing elements of the regime to specialized bodies can increase progress.** In a complex negotiation, it is inevitable that blockages will occur as countries assess their fundamental interests, which may vary widely. Ensuring that the regime has the agility to press forward with parts of the puzzle while other discussions are stalled is vital to meeting the overall objective. Moreover, outsourcing contentious and often technical issues to specialized agencies or to different venues can lead to breakthroughs that are more difficult within a single, centralized process.
- **Variable geometry can spur a race to the top.** By allowing Parties who wish to go further and faster the flexibility to move ahead, the resulting differences in commitment levels (“variable geometry”) can provide a means to test different approaches, dilute the power of laggards, and incentivize those who wish to lead.
- **Smaller-scale agreements, for example segmenting out parts of larger challenges or working with a smaller number of countries for specific purposes, can be used to pilot forms of agreement and related verification methodologies and expand on multilateral verification systems.** A series of agreements on smaller parts of the overall global challenge can help build mutual confidence about the potential for eventual success. As has happened in the trade arena, bilateral deals may be a substitute for, or a complement to, a globalized system. While perhaps not ideal, such interim approaches can demonstrate progress and build trust among countries until the time is right for more inclusive agreements.



- **Setting principles for “graduation” is challenging, but doing so can allow for agreements to evolve and grow as necessary over the long term.** Graduation recognizes that over time, the capacities and resources of regime participants can change. It provides a continuous but assured process in which countries can take on new responsibilities and roles at a predefined but gradual pace. Making such arrangements can require regime participants to strike an appropriate balance between equity and environmental integrity in international regimes, taking into account the participants’ differing capabilities, needs, and stage of development.

A principal conclusion is that countries seeking to control greenhouse gas emissions might consider a wider variety of experiences and potential pathways than are currently under consideration. The objective at this stage must be to consider all options that achieve emissions reductions. Ultimately, the goal must be a timely global stabilization of the climate, however that objective is reached. The ideas in this chapter are offered in the hope that they will help accelerate progress toward that all-important goal.

Introduction

The ubiquity of greenhouse gas emissions and the interconnected nature of responsibility for their control demand that the international community find ways to act together to reduce GHGs. Currently, the principal vehicle to achieve this goal is the United Nations negotiating process that began with a U.N. General Assembly resolution in 1990.^{a,1} The United Nations Framework Convention on Climate Change that grew out of these initial negotiations was opened for signature at the Earth Summit in 1992 in Rio de Janeiro and entered into force in 1994.² The UNFCCC has since become the chief forum for negotiating a collective international

a. Titled “Protection of global climate for present and future generations of mankind,” the resolution established an Intergovernmental Negotiating Committee that negotiated and crafted the United Nations Framework Convention on Climate Change. The full text of the Convention is available here: <http://unfccc.int/resource/docs/convkp/conveng.pdf>

response to the climate challenge and today sits at the center of a complex regime of actors and institutions seeking to achieve GHG reductions and manage numerous related challenges. (See box).

Purpose

This chapter asks whether efforts to fashion international mechanisms to reduce GHGs could be facilitated by a deeper understanding of how progress has been achieved in other complex global challenges. It draws on two companion chapters, one by Blechman and Finlay, and the other by Cottier, which examine how countries have addressed arms control and international economic arrangements, two subject areas that require multinational arrangements and a level of mutual trust and have been developed and advanced over decades. The chapter mines the weapons and economic agreements for ideas and takes a first cut at how they might be applied to the climate regime. While none of the global arrangements have “solved” weapons or economic challenges, these arrangements have made notable progress over many decades. Their experience is a lens through which to examine strategies for climate change mitigation.

This chapter is neither intended nor researched to be a critique of the UNFCCC negotiations, nor is it intended to reach specific conclusions about whether the UNFCCC pathway or additional configurations might speed progress on negotiation and implementation. There is considerable literature arguing the case either way.^{b,12} The goal of any negotiation or any climate effort must be to reduce global GHGs as dictated by the best available science, however that objective is reached.

In the fall of 2009, WRI, with the support of ClimateWorks Foundation, initiated a research process to consider what might be gained from the experience of negotiators who seek to

b. Some, such as Hare et al. (2010), have explained the values of a top-down comprehensive climate agreement. Others, such as Keohane and Victor and Bodansky and Diring, have suggested alternatives.

Box 1.1 Background on the UNFCCC

The UNFCCC negotiations aim for agreement among all 195 Parties on a range of issues.^{6,3} All member states have one vote under the UNFCCC, thus the process is characterized as consensus-driven.⁴ Overall, the issues under consideration span a wide range of human activity and aim to address or facilitate the reductions of greenhouse gases and manage the consequences of climate change. Actions may include reduction of emissions, technology transfer, finance of various obligations and commitments, support for adaptation, and the avoidance of deforestation.

The assumption is that all countries must move forward together, not least to spur collective ambition and to assure equitable outcomes. Otherwise, some countries might be tempted to be “free riders,”⁵ making no effort to limit their emissions but taking economic advantage of others that do. Against this concern, UNFCCC negotiators are constructing rules in which actions can be checked against commitments, a process summarized in the climate community as measurement, reporting, and verification (MRV).⁶ MRV is not limited to checking country GHG inventories and verifying whether greenhouse gas reduction targets are met. Several of the intertwined UNFCCC issues involve commitments of financial and technical support to developing countries. Recipient countries want these also to be subject to MRV.⁷

The parties to the UNFCCC have characterized themselves into two subgroups. Originally delineated in the Convention, the Annex I group includes members of the Organisation for Economic Co-operation and Development (OECD) as of 1992 and countries with economies in transition at the time. Most developing countries were implicitly designated as “non-Annex I,” with more limited obligations than Annex I countries.

The Kyoto Protocol, which established emissions limitations or reduction targets for Annex I parties,⁸ came into force in 2005 without U.S. ratification and established important particulars “to strengthen the weak legal heart of the climate change regime.”^{4,9} Countries that ratified the Protocol commit to quantified

(box continues on next page)

- c. The UNFCCC has been ratified (or otherwise accepted) by 194 countries and the European Union.
- d. The Kyoto Protocol to the UNFCCC was adopted on December 11, 1997, at the UNFCCC’s third Conference of the Parties in Kyoto, Japan. On February 16, 2005, the Protocol entered into force after it was ratified by 55 Parties to the UNFCCC accounting for at least 55% of total carbon dioxide emissions for 1990 of Annex I parties. The full text of the Protocol is available here: <http://unfccc.int/resource/docs/convkp/kpeng.pdf>.

Box 1.1 Background on the UNFCCC (continued)

greenhouse gas reduction targets, but can decide how to meet these obligations. The Protocol established several “flexible” mechanisms to expedite reductions and make them more economically efficient and to finance sustainable development and greenhouse gas emission reductions in the developing world.¹⁰ These include emissions trading and emissions offsetting. Developed countries with emission reduction targets may trade emissions allowances between themselves or jointly develop emissions reduction projects.^e Developed countries can also fund emission reduction projects in developing countries to create credits that can be used to offset their own emissions.^f

In recent years, negotiators have worked to establish long-term commitments under a comprehensive regime. They took the first steps in Bali, Indonesia, in December 2007, when the Parties to the Convention agreed to the Bali Action Plan. The Plan included building blocks on mitigation, adaptation, technology, and financing. It launched work on deforestation and land use under the so-called REDD (reduced emissions from deforestation and degradation) agenda.

Many negotiators hoped these efforts would culminate in the adoption of a legally binding agreement at COP 15 in Copenhagen in 2009. Instead, the Parties settled on interim steps, known as the Copenhagen Accord. The Accord recognizes that global temperatures should be kept from rising more than 2 degrees Celsius, cognizant of the fact that lessons from science might indicate that deeper cuts in global greenhouse gas emissions will be necessary to avoid dangerous impacts of climate change; that developed countries should commit to economy-wide emissions targets for 2020 that can be measured, reported, and verified; and that developing countries would implement mitigation actions to slow growth in their GHG emissions. The Parties at Copenhagen also agreed that developed countries would provide \$30 billion in climate finance from 2010 to 2012 and established a goal of \$100 billion per year by 2020 to help developing countries’ mitigation and adaptation activities. The Parties also agreed that these funds would be “new and additional” to existing development resources.

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e. These two options are known formally as “emissions trading” and “joint implementation,” respectively.

f. This option is exercised through the “Clean Development Mechanism.” More information on the market-based mechanisms can be found here: http://unfccc.int/kyoto_protocol/mechanisms/items/1673.php.

Box 1.1 Background on the UNFCCC (continued)

There was wide debate on whether the Copenhagen Accord moved the process forward. In any case, a year later, the COP 16 Cancun Agreements elaborated many of the provisions of the Copenhagen Accord and established a process for reviewing the adequacy of the long-term global goal of limiting warming below 2 degrees Celsius in comparison with preindustrial levels. The Cancun Agreements, adopted by the Parties to the Convention in December 2010, continue two negotiating tracks: the Kyoto Protocol track and the UNFCCC track, known as the Ad Hoc Working Group on Long-term Cooperative Action.

At the 2011 COP in Durban, South Africa, the Parties most significantly agreed to launch a process “to develop a protocol, another legal instrument, or an agreed outcome with legal force under the Convention.”¹¹ Crucially, this would require both developed and developing countries to cut their GHG emissions within a legally binding agreement. The agreed target is to conclude negotiations and reach agreement by 2015 and for the Protocol to come into effect starting in 2020.

manage other problems that by their nature require global cooperation. WRI convened a workshop of distinguished experts from the fields of weapons, human rights, international economic relations, and the broader world of environmental agreements, as well as some who work on the technical parts of verification such as remote sensing. The purpose was to consider which fields offered the best examples to extract ideas that might enhance or improve the climate regime. A day-long discussion allowed a preliminary review of the strengths and weaknesses of these other regimes and some initial comparisons with the needs of climate negotiators.

These conversations helped to narrow the inquiry to one set of agreements that were relatively unknown in the climate world (weapons), and another set of agreements, somewhat better known, but which warranted a deeper examination (trade). There already existed an extensive literature on the now more- than 1,000¹³ international environmental agreements,¹⁴ and additional analysis was unlikely to add much to the available knowledge. In the end, Barry Blechman and Brian Finlay of the Stimson Center

and Thomas Cottier of the World Trade Institute were asked to write papers. Many other regimes would also have been interesting to include.

Scope and Structure

In the course of examining these issues, WRI's starting point was to ask whether there were lessons that could inform the development of an effective system of MRV. As we learned more about both the weapons and economic agreements, however, the learning suggested additional ways of thinking about how mutual trust is actually developed. Thus the lessons harvested through this research touch more broadly on issues beyond the original scope and now provide additional food for thought on some of the wider strategies that might apply to the climate regime. It is our hope that these additional insights will prompt further discussion and may ultimately lead to a deeper level of analysis and research.

Finally, it is not necessary for the purpose of harvesting ideas and approaches to characterize the weapons and economic regimes in terms of their successes or failures. They have experienced both. The world has avoided nuclear holocaust, but many countries have or covet nuclear weapons. It is not the purpose of these papers to examine what defines success in any set of agreements. That would be an entirely different inquiry.^g Instead, the goal is to look at practice, process, and tools in these two complex global regimes and examine if their experiences can enhance global efforts to reduce GHG emissions.

g. Two major studies in the mid-1990s considered the effectiveness and implementation of international environmental agreements, asking whether such agreements lead to changes in behavior that help to solve environmental problems and how are commitments turned into action domestically and internationally. Both used case studies and extensive primary research. WRI drew on those studies in its own thinking. *The Implementation and Effectiveness of International Environmental Commitments: Theory and Practice* (David G. Victor, Kal Raustiala, and Eugene B. Skolnikoff eds., International Institute for Applied Systems Analysis, The MIT Press, 1998) and *Engaging Countries: Strengthening Compliance With International Environmental Accords* (Edith Brown Weiss & Harold K. Jacobson eds., The MIT Press 1998).



The section on Building Trust and Confidence looks at the interactive processes of agreement, verification, and trust-building that have, in the best case, led countries to make significant concessions to gain the benefits of global agreement. This section focuses on practices and tools developed under the comparison international regimes or deployed unilaterally by countries to verify the actions of the parties to an international agreement.

The section on Broader Questions for the Climate Regime examines additional components that contributed to the construction of effective regimes, including the value of a vision and grand bargain, the importance of legal form, the value of decoupling and outsourcing issues, the merits of variable geometry, and the issue of graduation.

The section on Food for Thought describes other timely issues that are worthy of further thought and research, in addition to the lessons harvested in this piece.

Building Trust and Confidence: The Critical Role of Verification

When a business deal goes bad, the parties to the contract generally take their differences to courts or mediators. When countries sign and ratify international environmental agreements, there is rarely a higher body to appeal to if they encounter failed expectations or cheating. This section focuses on practices and tools developed under international regimes or deployed unilaterally by countries to verify the actions of the parties to an international agreement.

First, the section defines verification and discusses its benefits. It then proceeds briefly to describe what reporting and verification systems currently exist under the climate regime. Third, it reviews the practices of the trade and arms control regimes. Finally, the section presents lessons from these two regimes that may be applicable to the climate regime.

The benefits of transparent reporting and verification

For the purposes of this chapter, the term “verification” refers broadly to the process of substantiating that procedures established in an agreement to address a transboundary challenge are being followed. As the cases reviewed in this subsection illustrate, verification can be coordinated under the auspices of an international agreement as well as unilaterally by countries and non-state actors.

There are several benefits to a robust verification system. One is to build trust and accountability. Verification systems are incorporated so that countries know that their counterparts are meeting their respective commitments and that no one gets a “free ride.”

A second benefit is learning. The process of collecting and verifying data on the implementation of commitments can help countries identify best practices in the design and rollout of measures to address the challenge in question.

A third benefit of a robust system is the tracking of aggregate progress. Beyond the dimension of state-level verification and accountability, verification systems can help keep score of the global effort in addressing a common threat. They help answer these fundamental questions: Are we doing enough? Are our actions effective?

A fourth benefit of verification, especially in systems that include reporting, is the facilitation of support. Developing countries in particular are often eligible for financial, technological, or other support to meet their responsibilities under an international agreement. Reporting and verification can help identify implementation challenges and deploy incentives to address barriers or elicit greater participation.

Reporting and verification procedures under the UNFCCC

This subsection first describes the procedures already operational under the UNFCCC that apply mostly to developed countries. It

then discusses more recent developments following the 2010 Cancun Agreements and 2011 Durban decisions.

Countries have a wide range of UNFCCC reporting obligations, including GHG emissions, climate policies, finance provided, and finance received. Reporting takes place through two primary tools: “national communications” and national greenhouse gas inventories. To assure comparability among countries, the UNFCCC provides periodically updated guidance. A common electronic reporting format is required.

Reporting under the Convention was meant to determine whether developed countries were acting on their voluntary commitment to reduce GHG emissions. Reporting under the Kyoto Protocol added two objectives: to determine if countries were in compliance with specific negotiated targets or commitments and to promote the creation and integrity of a global carbon market.

Under the Kyoto Protocol, verification of the provided information consists of reviews by expert teams who meet together and often make in-country visits. They check the completeness of the information and whether preparation of information adhered to guidelines. To the extent feasible, they verify the information obtained from external sources. The review is also intended to provide the Conference of the Parties and the Compliance Committee with a technical assessment of Kyoto Protocol implementation, which they report publicly. Countries may review reports before they are made public.

In the case of the Kyoto Protocol, if an expert review team identifies problems, it is required to notify the relevant country of these problems and offer advice on how to correct them. The country may correct the problems or provide additional information within a specific time period. If unresolved problems persist, they are listed as a “question of implementation” in the final review reports.

Two branches of the Compliance Committee—a facilitative and an enforcement branch—process these reports. The facilitative branch provides advice and guidance to countries in implementing the Protocol. The enforcement branch determines compliance with a country’s target and the methodological and reporting requirements. The enforcement branch may require a non-complying country to achieve a supplemental emission reduction equal to 1.3 times the amount of excess emissions in its next commitment period. The country can also be required to develop a compliance action plan, and its eligibility to participate in emission trading may be suspended.

The punitive requirements noted above have proved to be problematic in practice. It has been extremely difficult to force countries to comply with their commitments under the Kyoto Protocol. Canada anticipated failing to meet its target and pulled out. The United States signed but never ratified. President George W. Bush said he would not implement the agreement. The debate over why the overall objectives of GHG emission reductions in the Kyoto Protocol have not been met is contentious, and is outside the scope of this paper.

Until COP-16 in Cancun in 2010, developing countries only submitted national communications at their discretion, and their reports were not subject to technical review. This became increasingly problematic as only inconsistent and outdated data were available for some of the largest emitters of GHGs in absolute terms, like China and India.

The Cancun Agreements^h established a new framework to fill this gap, and the Durban decisionsⁱ adopted detailed guidelines

h. United Nations Framework Convention on Climate Change, “Decision 1/CP.16 on the Cancun Agreements”, 2010, <http://unfccc.int/resource/docs/2010/cop16/eng/07a01.pdf#page=2>.

i. United Nations Framework Convention on Climate Change, “Decision of COP 17 on the outcome of the work of the Ad-Hoc Working Group on Long-Term Cooperative Action under the Convention”, 2011, http://unfccc.int/files/meetings/durban_nov_2011/decisions/application/pdf/cop17_lcaoutcome.pdf.

to make this framework operational.¹⁵ Both developed and developing countries are now required to produce, at comparable frequencies (i.e., biennial), national reports that will be verified. Developed and developing countries are to produce national communications every four years. In addition, they must submit updates on key parts of their national communications every two years, including GHG emissions. Developed countries will report on progress in implementing their quantified economy-wide emission reduction targets; projected emissions for 2020 and 2030; and the provision of financial, technological, and capacity building support to developing countries. In addition, developed countries continue to be required to submit annual greenhouse gas inventories. Developing countries are to report on their mitigation actions and their associated effects, including associated methodologies and assumptions, as well as support needed and received. Developed countries committed to provide necessary financial and capacity-building support to help developing countries meet this new reporting requirement.

In addition, in Durban countries adopted detailed procedures for the verification of these reports. They will be subject to a two-step process consisting of a technical review by experts and an exchange of views among Parties based on that technical assessment. This process is called “international assessment and review” for developed countries and “international consultations and analysis” for developing countries. There is currently no compliance mechanism under the COP, but the Durban decisions leave open the possibility that one could be agreed upon in the future, possibly under the new agreement to be adopted in 2015. In addition to these verification procedures, the provisions of the Kyoto Protocol described earlier will continue to apply to the developed countries, including the European Union, that sign up to a second commitment period.



Verification in other regimes: weighing the costs and benefits of participation in relation to sovereignty

The element of verification plays an important role as countries weigh the pros and cons of participating in the trade and arms control regimes. In the case of arms control, participation requires, to some extent, ceding certain elements of state power that were thought to constitute sovereignty—an enormously risky choice for a country to make. Thus, to avoid nuclear holocaust, countries have agreed to increasingly intrusive domestic inspections.

Provisions in the Treaty on the Non-Proliferation of Nuclear Weapons (NPT) and the Chemical Weapons Convention (CWC) permit the implementing organizations' executive councils to take serious questions of noncompliance to the U.N. Security Council for further action, as has been done for Iran, resulting in six sanctions resolutions. In trade, members of the WTO allow panels to adjudicate disputes and recommend domestic legislative revisions with a threat of authorized economic “retaliation” if revisions in the decision adopted by the Dispute Settlement Body are not made.

Review procedures such as these were not easy to achieve. Countries weighed the advantages of conceding some level of authority against the loss in national control. The willingness of countries to forgo some aspects of sovereignty is particularly visible in the monitoring, verification, and dispute resolution procedures that they accept.

A factor that arguably eases countries' acceptance of some restrictions on their sovereignty is that the benefits of international cooperation are clear. In the weapons and trade regimes, the benefits are nuclear safety and economic prosperity. The Cuban missile crisis demonstrated the very real possibility of nuclear war. Liberalized trade or reduced tariffs provide many countries with clear, if less dramatic, benefits in terms of economic well-being. For example, developing countries accepting an agreement on intellectual property rights—what Cottier describes as “a substan-

tial limitation of national sovereignty”—can be viewed as making a concession under the Uruguay Round of the WTO, in exchange for increased liberalization of future trade in textiles and agricultural products.

In contrast, many countries do not yet see the advantages of reducing greenhouse gases. Those that do still worry about the implications for restrictions on economic growth and competitiveness. Even if the Copenhagen and Cancun commitments reflect a growing appreciation of the risks of climate change, many countries do not yet see the impacts of climate change—with most visible changes still decades away—on the same level as those from weapons of mass destruction.

In cases where countries accept that there are domestic benefits for participation in an international agreement, they are more likely to accept more intrusion on their sovereignty. They may do this because they accept the existential threat of nuclear warfare or because they crave the benefits of trade. And, in those cases, the verification systems put in place can be made to seem more attractive if it can be shown that they bring additional domestic benefits. This has been the case notably on reporting of economic activity in the trade regime. Cottier explains, for example, that reporting obliges governments “to assess the state of play and to coordinate work among different departments, which is useful as a fact-finding exercise in its own right.” The mandate to report can also enhance domestic awareness of an issue—something that could be especially useful in climate change where behavioral changes must be a component of mitigation. But regular reporting that is well-integrated in domestic regulatory structures also has potential pitfalls if reporting becomes routine, has high costs, and provides little useful information.

International dispute processes can also assist in meeting national goals. For example, once information is reported, the existence of a formal complaint procedure and DSB can provide an important incentive to address issues, although not necessarily in a way

that involves formal dispute settlement. The WTO's Trade Policy Review Mechanism (TPRM) illustrates this proposition. While the TPRM is not intended to enforce obligations or settle disputes, its ability to bring issues to light can sometimes allow for less formal methods of resolution. Cottier describes how "problems identified often will be internally addressed and [a member will be] offered an opportunity to remedy the situation short of being exposed to dispute settlement." The incentive to address issues early on relies on avoiding dispute settlement. Moreover, dispute settlement relies on countries having a common interest in resolving the dispute.

In the weapons world, poorer countries have been persuaded to monitor chemical and biological weapons because the same tools help them track disease. These co-benefits justify investment of their scarce resources in activities with both local and global impact.

For climate change, there has been increasing focus on formulating the inherent concessions as benefits. For example, ridding economies of fossil fuels to limit GHG emissions comes with economic gains that might be seized when countries develop new technologies, markets, and products. Another benefit put forth by the national security community is reduced dependence on oil imports. But none of these thus far have been sufficiently compelling to make the case for either deep national emission cuts or an ambitious and effective international agreement. Whether such concessions can, in the future, tip the scales toward an agreement followed by domestic action is currently unknown.

Evolving verification mechanisms over time

The trade and weapons regimes illustrate how a mutually satisfying verification process can build toward even more robust monitoring and verification procedures over time.

When core national survival interests are involved, as they are with nuclear and other lethal weapons, the major powers will first verify using their own intelligence resources, even before multi-

lateral verification systems are in place. But unilateral verification has its limitations; it often depends on secretive surveillance or other methods, which frequently makes it difficult to provide proof, for example to an international forum, without disclosing sources and procedures.

Joint monitoring efforts have the advantage of making verification easier, while at the same time building mutual trust in the ends and purposes of the monitoring. Thus, nuclear agreements have moved, in a roughly 40-year evolution, from monitoring only through “national technical means” (intelligence satellites), to periodic on-site inspections to count missiles, to stationing permanent observers and technical equipment at “each other’s relevant manufacturing facilities,” and to the even more intrusive measures included in the NEW START agreement, which permits inspectors to view and count warheads on selected missiles in silos and on submarines. Small steps, often combined with extended interactions that build mutual trust, have led to successive accomplishments and confidence building. As Blechman and Finlay summarize, “International practice in this area has advanced substantially with a degree of intrusiveness accepted today that would have been unthinkable at the onset of the nuclear age.”

One should not assume that such systems of mutual verification evolve in a smooth or predictable process. Clearly, verification and monitoring efforts are important, but so is growing practice and experience, which nourishes a growing level of comfort. The two together act to resolve the tension between giving up sovereignty on the one hand, and reaping benefits on the other. For example, arsenals grew during the extended U.S.-Soviet-Russian negotiations over strategic arms, including the Interim Agreement on Offensive Arms (SALT) and START. But eventually, the countries reached an agreement that reduced the number of strategic weapons mutually directed at each state. This opened, as Blechman and Finlay write, a “new era of transparency and confidence building.”

The weapons experience also illustrates the damage to longer-term negotiating prospects when there is doubt about adherence to commitments. Without verification provisions or an implementing organization, the Biological Weapons Convention was “violated massively” by the Soviet Union and might still be violated by other nations. When the Soviet Union’s cheating was uncovered, levels of distrust developed that spilled over to nuclear negotiations, making it more difficult to ratify agreements.

Countries’ agreements to allow their practices to be subject to scrutiny and review by their peers is even deeper and perhaps more revolutionary in some parts of the trade regime. In the WTO, member states can bring complaints to a panel whose decisions, if sustained on appeal, require the corresponding countries to take actions that heretofore were considered critical domestic prerogatives. Cottier notes that countries are at times required to adjust domestic legislation or to lower tariffs, both matters that have been considered at the very core of a country’s national interest, in order to negotiate rates internationally. Cottier argues that countries do this because they see that the commitment “equally translates into enhanced market access and legal security abroad.”

Yet, despite the merits of letting the verification systems strengthen with time, it is worth noting that such verification systems should still be convincing enough from the very beginning to build the confidence of international counterparts.

Possible lessons on verification for consideration in the climate change regime

The history just discussed shows how it is possible to build a robust verification scheme over time, as participants in international regimes develop increasing levels of trust in the others’ intentions and become willing to allow domestic intrusions of various sorts. The elements of interaction include mutual implementation of verification schemes and experience in the success of those efforts, as well as other elements of trust that grow out of extended interactions in resolving mutual challenges.

This is far from a mechanical process. A review of the trade and arms control regimes reveals interesting design features and political strategies for building verification systems. While they should be considered carefully and may not be entirely applicable to climate change because of the distinct nature of the climate challenge and differences in institutional and political dynamics, the following lessons may be drawn from this subsection's review:

- **Verification procedures can become more stringent over time.** Experience from trade and arms control suggests that verification procedures in the climate regime could evolve toward greater scrutiny as countries build mutual trust through successive interactions, a series of small steps over the years, and growing levels of mutual verification activities. Again, this is not a mechanical process, but rather a product of numerous interacting and intertwined factors that altogether contribute to building mutual confidence.

In the weapons regime, small concessions about the nature of inspections of declared facilities have led to increased confidence, in turn leading to more extensive inspections (including the placement of permanent video surveillance and tamper-proof seals) and to the potential for challenging on-site inspections of undeclared facilities. Growing confidence in international arms verifiers has produced a proliferation of inspection bodies of relative independence.

Applied to the climate context, these lessons suggest that, as one element, climate negotiators might build into agreements clauses that allow reporting and review guidelines and institutions to be revised periodically. The lessons might also encourage countries, on a voluntary basis, to report information in more detail or more frequently and to participate in a more stringent review process.

- **Countries may be more willing to agree to verification procedures when those procedures also can be shown to serve other domestic purposes.** Cottier notes that governments in the trade regime found domestic benefits to collecting economic data intended for compliance with international verification obligations. The mandate to report can also enhance domestic awareness of an issue and encourage domestic coordination among agencies, such as in the aforementioned example of biological weapons monitoring improving public health data. In the climate context, countries can also benefit from the domestic coordination demanded in order to provide data required for UNFCCC national communications and, in the future, biennial reports.
- **A variety of formal and informal complaint procedures and sanctions can motivate parties and facilitate resolutions.** The existence of a formal complaint procedure and DSB in the trade regime has motivated countries to fulfill their commitments. It has also encouraged some processes for more informal and amicable resolution of international disagreements. In addition, the existence of a dedicated process for complaints and sanctions has allowed the review process (for example, the WTO's TPRM) to be seen as non-punitive and facilitative, and disconnected from sanctions. Indeed, both the arms control and trade regimes suggest that setting up a distinct process for compliance assessment and enforcement is essential. In the climate context, the current focus is on "softer" or more "facilitative" approaches to compliance, rather than formal compliance proceedings. This could change, however, during the new round of negotiations on a binding agreement to be concluded by 2015.
- **Countries' perceptions that there are clear benefits of international cooperation can lead them to forgo some aspects of their sovereignty in favor of engagement.** In the weapons and trade regimes, the benefits are nuclear safety and economic prosperity. Experience in these regimes suggest that one could expect increased understanding and visibility of the benefits of climate action to elicit a greater willingness on the part of states to make

commitments into the regime. There may not be much that the UNFCCC can do to make the benefits of climate action clearer to domestic constituents in-country. One possibility, already widely considered, could be to allow countries to frame their mitigation commitments in a way that best aligns with their domestic development goals. Many governments are already touting the economic, health, and other co-benefits of climate action. Beyond the UNFCCC, the likely increased impacts of climate change in the future may make the costs of inaction clearer.

- **Verification can take the form of unilateral and multilateral processes operating in parallel.** In the trade and arms regimes, various forms of verification have been used, whether unilaterally or by a panel of peers. Much of the focus in the climate regime has been on developing a multilateral set of rules to promote transparency and accountability around international commitments. In addition to these efforts, UNFCCC Parties might consider taking unilateral actions to assess whether the Parties are adhering to their pledges. The Parties have been reluctant to openly criticize one another for fear of being subject to criticism themselves. While such unilateral verification may create short-term tension by putting a spotlight on poor performers, it may in the long run lead to greater trust that all countries are doing their part and may lead to more concrete steps to address climate change. The quest for review procedures that will appeal to all countries could be counterproductive. If verification procedures are driven by the lowest common denominator, they may end up being too loose to convince international counterparts of their efficacy.

Broader Questions for the Climate Regime

Although the initial purpose of looking to other international regimes was to harvest lessons on trust and verification, our review of the papers on weapons and trade regimes revealed additional components that contributed to the construction of effective regimes. This third section examines some of those

components and asks what role they can play in the evolving climate regime. These ideas are separated out for the purpose of this chapter, but, in fact, the opportunity to enhance verification is intertwined with other elements of joint experience. The lessons cross over rather than develop in logically straight lines.

The value of a comprehensive vision and “grand bargain”

The Earth Summit in 1992, where the UNFCCC was opened for signature, recognized the sustainability challenges facing the planet, including its heavy reliance on fossil fuels. Article 2 of the Convention (its long-term objective) articulated its vision:¹⁶

...stabilization of greenhouse gas concentrations in the atmosphere at a level that would prevent dangerous anthropogenic interference with the climate system...achieved within a time frame sufficient to allow ecosystems to adapt naturally to climate change, to ensure that food production is not threatened and to enable economic development to proceed in a sustainable manner.

Articles 3 and 4 establish the Convention’s equivalent of a “grand bargain,” recognizing countries’ “common but differentiated responsibilities and respective capabilities.”¹⁷ Developed countries would take the lead to reduce their GHG emissions and would provide support so that developing countries could embark on a sustainable pathway without sacrificing their economic development goals.¹⁸ The UNFCCC further agreed to update its understanding of “dangerous anthropogenic interference” through a formal, periodic scientific review by the Intergovernmental Panel on Climate Change (IPCC).

This same frame—an overarching vision along with an “ultimate trade-off” for balancing values toward which all parties commit to work—has helped guide states at various stages of development and with differing resources as they negotiate increasingly specific arrangements for weapons, particularly regarding nuclear development.

One vision is a world without nuclear weapons. An essential first step toward this vision was a “grand bargain” enshrined in the 1968 NPT to “constrain and eventually eliminate nuclear dangers.” Countries with nuclear weapons would work to eliminate their arsenals while countries without such weapons would refrain from developing nuclear arsenals and receive support to develop civilian nuclear energy. This support offers nonnuclear countries something tangible in return for renouncing weapons development.

Although it took 19 years before all 98 original signatories had ratified the treaty, the expectations articulated in the NPT have been a beacon that has guided and shaped a series of subsequent developments that have put muscle into the resolve to limit weapons development. The most important of these is the International Atomic Energy Agency (IAEA), a U.N.-affiliated organization, which has grown substantially in resources and clout since the NPT came into force. The IAEA works to ensure that nuclear facilities intended for peaceful purposes are not used to camouflage weapon programs. Safeguards include technical means (cameras, tamper-proof seals, etc.) and on-site inspections by IAEA personnel.

Similarly, countries with manufacturers of materials and equipment that could be used in nuclear weapon programs banded together to create the Nuclear Suppliers Group (NSG). The NSG maintains a list of sensitive items that require special export licenses and may not be exported to states that are not signatories to the NPT.

In addition, other non-treaty-based measures have promoted nonproliferation at the bilateral and multilateral levels including, for instance, the Proliferation Security Initiative (PSI) and the Global Partnership Against the Spread of Weapons and Materials of Mass Destruction.

Although nuclear countries India, Israel, and Pakistan do not participate, and North Korea decided in 2003 to back out of the

NPT, the bargain has proved robust enough to keep global attention on the issues of proliferation. As recent issues involving Iran's alleged attempts to gain nuclear weapons demonstrate, the monitoring capacity of the IAEA essentially throws a global spotlight on violators and provides a means, however imperfect, to track their activities.

The trade world also has a vision found in the General Agreement on Tariffs and Trade of 1947 (GATT) which set the long-term agenda for negotiations and the proliferation of additional agreements. The parallels to "grand bargains" in the UNFCCC and NPT are less than perfect, but it is clear that countries that want to enter the trade regime are willing to forgo core elements of sovereignty, for example the ability to levy tariffs, in exchange for the perceived benefits of membership, such as stable and fair economic conditions.

The value of establishing an agreed vision and a grand bargain is that, together, they continually remind the participants of the global objectives they are working toward and what the end point is, even as actual work toward those goals may take a variety of forms and achievements may wax and wane. Vision and bargain are not a formula or a panacea, but they are a framing arrangement that has motivational value in some circumstances. Presidents as recently as Barack Obama have invoked this agreed core objective to leverage additional and deepened commitments. For weapons, it has been a touchstone, articulating a common and compelling desire to act that has apparently galvanized action, even among countries that might quibble with certain details or demur to formal arrangements in some circumstances. In the case of climate change, the vision can be the umbrella within which a variety of approaches and pathways might be pursued. Certainly, within the UNFCCC framework, the grand bargain has been an important element of negotiating positions thus far.



Articulation and re-articulation of goals

Sometimes simply articulating or rearticulating a goal or vision can focus international and national attention on an issue and help drive action toward resolving it. Doing so at a political level has, at important moments, functioned to empower nuclear negotiators. The 1968 NPT goal of eventually eliminating nuclear weapons has been periodically rearticulated in the intervening years and is still embraced by heads of state. In an example presented by Blechman and Finlay, President Obama convened the heads of state of the 15 countries constituting the U.N. Security Council in September 2009 to reaffirm their commitment to “the peace and security of a world without nuclear weapons.”

More specifically, such pledges or commitments at the international level can focus domestic attention and even prompt domestic action toward a goal. As Cottier describes,

Success and impact would seem most limited with a more general agenda. Pledges made may go unheard. On the other hand, the impact of these groupings on domestic policy formulation must not be underestimated. They are an important part of informal global governance and secure at least minimal effects in policy co-ordination.

An example from the climate regime is found in the efforts and reiteration of vision surrounding the 2009 negotiations in Copenhagen. In the run-up to the negotiations, many countries, including the United States, China, and India, developed national emissions reduction targets.⁴⁹ While targets were set in the context of international negotiations, they also focused domestic attention on climate change. This attention does not ensure that national governments can meet their international commitments, but it can help provide incentives to craft climate change mitigation policies or generate greater public demand for action, thereby increasing the domestic efficacy of national governments to deliver on international commitments.

Simple repetition of the long-term goal, particularly at a political level, has other virtues. Notably, it can invite attention and reviews of progress. For example, a world spotlight has helped pressure countries toward disarmament, what Blechman and Finlay call “useful diplomatic levers to pressure for greater progress.”

A similar example can again be found in the Copenhagen negotiations, which provided the forum for an unprecedented meeting of 120 world leaders.²⁰ The relatively unscripted face-to-face conversations among political leaders to some extent circumvented the often marginalized environment ministries who largely dominated global climate policy discussions.^j Not everyone saw the Copenhagen meetings and the Copenhagen Accord, however imperfect, to be the much-needed political recharge to the international process. Yet a year later in Cancun, important elements were integrated into more formalized agreements, with further details finalized and adopted at COP 17 in Durban.²¹

From the point of view of the United States, emphasis on climate change in its international dealings has clearly increased in the Obama administration, a marked difference from the Bush administration before it. But the inability of the United States to ratify international agreements, including climate, continues to cause consternation in the international climate world.

Moreover, as other international regimes and informal groupings have evolved, it is important to have goals continuously articulated and rearticulated and sometimes adapted to changing circumstances at the highest levels. This has often facilitated regime progress by ensuring that issues stay central and by providing political guidance to negotiations that benefit from an infusion of power politics. In economic regulation, existing international organizations are, as Cottier notes, “superseded...by informal groupings such as the G-7, G-8, G-10 and G-20 amounting to de facto governance structures seeking to set policy directions.”

j. With rare exceptions, environment ministers are typically the weakest members of any government’s cabinet. Some countries do manage those responsibilities with foreign ministry expertise.

The countries that put together the principles of the Copenhagen Accord (the “BASIC” group of major emerging economies, i.e., Brazil, South Africa, India, and China, along with the United States and drawing on concepts from a broader group of parties), closely parallel these informal groupings.

High-level political forums provide a place to debate and come to consensus on policy directions, leaving the details of implementation to more specialized venues. Even if the outcomes of head-of-state discussions occasionally reset or redirect climate negotiations, presumably they reflect imaginable outcomes and a political reality about implementation. Ideally, these discussions can also help spur domestic action, enabling governments to more effectively meet their internationally negotiated goals.

Is ratification necessary?

The obvious purpose of international negotiations is to devise a formal agreement that will be implemented domestically. To this end, considerable effort is put into formulating language to which all participants can agree and mechanisms for monitoring and verification to assure mutual compliance.

A thought that is almost counterintuitive in this context is the possibility that an unratified agreement, even one that has never entered into force, can nevertheless produce the desired substantive outcomes and even lead to the formation of additional institutions and bodies that further the overall objectives of the agreement. There are examples, in both trade and arms control, when a country participated in good faith in the negotiation and never submitted it for ratification or had it rejected. Yet through political decisions and domestic law, that country nevertheless carried out the terms.

The UNFCCC and “legal form”

After signing an internationally legally binding agreement, for many countries ratification is the process by which they become

formally bound and incorporate provisions into their domestic law. Nonbinding agreements typically do not require this additional step. As witnessed at the Durban COP, many Parties to the current climate negotiations seek a legally binding agreement.

There is an extensive literature that outlines their reasons. For example, the Mary Robinson Foundation, Climate Justice, and the Foundation for International Environmental Law and Development argue that legally binding commitments tend to be subject to more thorough negotiation and preparation processes.²² These institutions believe such commitments result in better implementation and compliance, and the consequent binding obligations “may also allow for legal challenges and give civil society additional leverage to hold their governments accountable.”²³ Hare, Stockwell, Flachsland, and Oberthür (2010) posit that legal form is “an indicator of the likelihood of [commitment] fulfillment,” providing enhanced confidence in making and delivering commitments and facilitating domestic implementation.²⁴ Even when arguing for diversifying the approaches addressing climate change, Bodansky and Diringer (2010) take the position that in the long run, a legally binding agreement “makes sense.”²⁵

Many UNFCCC negotiators hope and expect that negotiations will result in an agreement that they can take home, ratify, and implement. They point to the fact that an internationally “in force” regime shows the highest level of political intent and thus increases the probability of implementation. However, if one looks at the trade and arms regimes, one finds that perhaps thinking about “the formalities” in a different way may get us to the same result using a different path.

Ratification in the weapons and trade regimes

The weapons regime brings an entirely different way of looking at ratification. Some principles have been translated into action without formalities (for example, regardless of whether the regime has been ratified by all parties or is in force). Neither the United States nor China, two major nuclear powers, has ratified

the Comprehensive Nuclear-Test-Ban Treaty (CTBT). Most of the nuclear states (including the United States and China) unilaterally stopped nuclear tests anyway, a promise that has held for 14 years. As Blechman and Finlay point out, only India, North Korea, and Pakistan have tested since 1996, and their actions have largely been condemned by the international community.

Even though two major nuclear powers did not formally participate in the CTBT agreement, the international community nevertheless launched a subsidiary or spinoff body, the Preparatory Commission for the Comprehensive Nuclear-Test-Ban Organization (CTBTO), to monitor compliance with the test ban. Although the treaty has not formally gone into effect (44 named states must ratify for that to happen; 9 have yet to act), the participants agreed to establish the CTBTO on a “provisional” basis.

Funded by governments, including many of the ratification hold-outs, the CTBTO engages in a number of actions that have increased confidence that weapons agreements can be trusted to achieve their goals. It established a worldwide system of hundreds of sensors that has demonstrated its ability to monitor the globe.²⁶ This system allowed accurate reporting, for example, of the small North Korean tests in 2006 and 2009.²⁷ This success has built confidence in the treaty and showed, as Blechman and Finlay note, “that a test ban is verifiable.” Some nations continue to stay out of the treaty, but their engagement in and support of the CTBTO meets substantive needs to know whether testing is taking place and symbolically demonstrates a joint commitment against testing.

In the economic field, relations are generally framed in terms of formal international agreements (that is, those that are ratified and entered into force) to provide appropriate legal security and predictability. But there are other models, for example in monetary affairs, which are informally managed by central banks and the IMF based on political “concertation” (cooperation, as among opposing factions, aimed at effecting a unified proposal or concerted action), rather than agreement.

Ratification in the climate regime

How might these approaches be applied to climate negotiations? In some respects they already have been, with mixed success. The Kyoto Protocol went into effect and has functioned for several years without the participation of the United States. The Durban COP set in motion a second commitment period without the prospect of U.S. involvement.

One argument for less formal methods of instituting change is practical: U.S. ratification of almost any international agreement is increasingly political and difficult. In the current political environment, very few international agreements get through ratification, which may be the fate of a climate agreement. Yet, in the context of the Copenhagen Accord, albeit without force of domestic law, the Obama administration has committed to reducing emissions 17 percent by 2020 below 2005 levels. The Obama administration is working toward this goal by, among other things, issuing regulations under existing laws, in effect implementing commitments made to the international community in Copenhagen.

Nevertheless, these commitments are regarded with some suspicion for a variety of reasons, including that they are not anchored in a single legislative commitment. There is also concern that the U.S. commitments and related actions are unenforceable and might be rolled back by future administrations. Of course, as Canada's actions in renouncing the Kyoto Protocol in 2011 have shown, even a fully ratified agreement is not a guarantee of ongoing commitment, should political commitment or other conditions fail. All of this history and context must be taken into account in examining whether or how global agreements can influence behavior with or without the formalities of ratification.

Keeping in mind the different pathways that the other regimes have taken, let us look at how this type of alternative scenario might apply in the climate change negotiations, either under the U.N. or another process. Participants could negotiate an instrument, which some might formally ratify. Others might hold them-

selves out, as in the case of the CTBT, but nevertheless take actions consistent with its principles. Others might sit out and watch the experience of the others.

Verification organizations might develop, like the CTBTO, to provide useful guidance in gathering relevant information, making it available and demonstrating the potential for effective monitoring and verification. These organizations might be supported in a variety of ways even by countries that have chosen not to participate formally in the basic agreement. Whether these organizations would serve a compliance function—either in reviewing the integrity of data, in focusing specific attention on intentional or unintentional errors, or even documenting domestic mitigation actions—might be a subject of further discussion or might evolve as the institution matures.

In the climate context, it is imaginable that mutual verification interests could include criteria and formats for country greenhouse gas inventories and details related to funding commitments, or even, over time, extend to monitoring compliance with agreements for greenhouse gas reductions. Associations built around this function might provide a positive form of interaction that develops and deepens in intensity and detail.

These various shapes and forms of achieving results directly relate to the ongoing debate about legal form, and put into perspective its role in achieving progress on climate change mitigation. In reality, as Canada's experience with the Kyoto Protocol demonstrates, ratification alone does not *guarantee* substantive outcomes. Often, it means different things to different countries. For some, ratification puts the matter ratified squarely on the domestic agenda with legal force, for example in the United States, where ratified treaties assume a status set out in the Constitution. For other countries, ratification is more symbolic and requires further domestic legal implementation. In such circumstances, even formal ratification may not guarantee that treaty obligations are translated into the everyday behavior of businesses and individuals and thus may not drive real greenhouse gas reductions.

There is a long history in which some countries ratify international agreements, perhaps even incorporating them into domestic law, with no intent or power to implement. Experts in international law routinely caution negotiators to consider substance over form. José Goldemberg pointed out that “History is littered with international agreements that took many years to negotiate but were never implemented....”²⁸ James K. Sebenius noted, “Advocates of international cooperation on climate change should bear in mind the distinction between success measured by the ratification of diplomatic instruments and actual policy shifts implemented over time....”²⁹

Decoupling results and ratification

Another way of looking at the interaction between formalities like ratification and operational success is to consider how international norms have been established in a variety of ways that can guide behavior. The examples cited earlier show that it is possible, as Blechman and Finlay articulate, to “establish international norms that, over time, can gain strength and become the only acceptable form of behavior” without ratification. Needless to say, there are pros and cons to such an approach.

Serious negotiations that have not resulted in formal ratification by either important parties or all parties have nevertheless produced unilateral, highly effective moratoria on nuclear tests (CTBT) and a worldwide system of sensors that can detect nuclear tests anywhere (also CTBT). The Law of the Sea Treaty is another example. After decades, the United States has still not ratified the treaty, but the treaty has established clear norms that are followed closely by virtually all nations for exploitation of resources in and under the oceans. A somewhat less clear case is the Landmines Agreement, which has not been ratified (nor signed) by the United States, Russia, or China, but a norm seems to be developing nonetheless against the use of antipersonnel mines.

Accepting the possibility of differences in the dynamics among regimes, it is worth examining whether this process of informal agreement and accretion of de facto commitments rooted in

fundamental reassessments of self-interest can help gain short- or even long-term progress in the case of control of greenhouse gases. For example, unless blocked by the Congress, President Obama's Environmental Protection Agency is using existing legal authority to control GHG emissions.

Individual U.S. states, groups of states, and cities have engaged in their own often robust emissions reductions programs. If they are ultimately successful in reducing GHG emissions, does it matter if they evolved in a parallel fashion to other countries' more formal commitments? One could thus ask whether an "international norm" to reduce GHGs has been established, along the lines of what Blechman and Finlay describe, that is, in effect, driving the administration and other U.S. actors to act domestically despite not having formally binding international law commitments.

Moving forward without universal agreement

The UNFCCC essentially has bifurcated negotiations, reflecting the realities that the United States ratified the UNFCCC but not the Kyoto Protocol and that non-Annex I countries do not have binding commitments under the Kyoto Protocol. If the United States or any other major party ultimately cannot ratify a global treaty for limiting greenhouse gases, will this nonparticipation be fatal to achieving progress on GHG reductions?

The weapons and economic regimes demonstrate there may be reasons to keep talking and even conclude agreements, even if major powers stall or sit on the sidelines. In the view of Blechman and Finlay, the CTBT has "clearly been beneficial to global security" because it encouraged many countries unilaterally to declare moratoria on nuclear testing. Moreover, as noted, the international community took it upon itself to establish the monitoring organization called for in the treaty, as a preliminary measure. This has reinforced confidence that nuclear weapons cannot be tested clandestinely and that the treaty is therefore verifiable. Cotter's analysis of economic regimes reinforces this conclusion. He notes that rather than lead, sometimes "key players only follow

suit,” as the United States did when signing on to EU-led negotiations on financial services in the Uruguay Round of the WTO.

Moreover, regimes can grow, or broaden from a small group to a large one. The Proliferation Security Initiative (PSI), an ad hoc, flexible, voluntary agreement, allows navies to interdict vessels suspected of transporting nuclear materials or equipment. The PSI has grown from 11 like-minded states in 2003 to more than 90 partners. Similarly, the GATT/WTO grew from 23 members in 1947 to 153 members currently, with 30 more negotiating entry. Within the General Agreement on Trade in Services (GATS), commitments on financial services were negotiated without the United States, which joined only at the end. The plurilateral Agreement on Government Procurement in the WTO has been limited to industrialized countries and is expected to gradually expand to emerging and developing nations.

Even bilateral agreements may form the basis of subsequent multilateralization, such as the Blair House agreement on agriculture between the European Union and the United States, which provided the basis for the subsequent WTO Agreement on Agriculture. Blechman and Finlay show that major countries can change their minds and join regimes that have demonstrated a capacity for effectiveness. (Or, as noted earlier, they can essentially adhere without formal agreement.)

Building agreements from a small circle of participants and gradually expanding consensus and results over time, of course, cannot overcome fundamental differences of interests among countries. The current stalemate of the Doha Development Agenda is an example in point. The 2001 accession of China undermined the prospects of the Doha Round as members grew reluctant to agree to further market liberalization that might undermine domestic production. The problem, however, is one of substance, further accentuated by the 2007 financial and subsequent debt crisis, and is not rooted in a particular mode of negotiating additional commitments. The despondent mood—some close observers call the



situation dire or even dead because the “gaps [between countries’ substantive positions] are too huge”—is stimulating substantial rethinking of regime relationships.³⁰

In the case of climate change, efforts like the Kyoto Protocol have and likely will continue to proceed without a few key players. The tools embodied therein might be engaged by individual U.S. states like California, if not the federal government, through heeding Bob Dylan’s admonition to powerful people, “Don’t stand in the doorway, don’t block up the hall.” As mentioned later in this section, other forums could manage particular problems by creating country- or region-specific ways of managing GHG emissions or thinking about developing and sharing technology advances, as the MEF and various bilateral arrangements are trying to do.

The real test is whether these other forums are achieving their core purposes of reducing GHG emissions, not whether they are threats to the UNFCCC, which is a means and not an end. Lessons from the economic regime especially suggest that more limited agreements can bring results in practice and, in some circumstances, might be more practically attainable than a comprehensive, broad, and deep regime.

Consensus-based decision making versus other models

A significant obstacle in the UNFCCC process, occasionally overridden by a brave chair of a particular COP, is the requirement of consensus among 195 parties with often wildly disparate interests and objectives. These ground rules have pertained from the beginning of the UNFCCC negotiations. At COP 16 in Cancun, Bolivia’s objection to the Agreement was quickly overridden. If that objection had been made by China or the United States, it is not clear what the outcome might have been.

Revisions in the current UNFCCC voting rules could remove certain bumps in the climate negotiating road (for example, by requiring something less than consensus for some or all issues,

or even by considering weighted voting on particular issues).^k But how much would these changes accomplish, and are voting rules the real barrier to progress? Any suggestion that it would be better to move to the rules of the WTO or any other regime that does not require consensus requires a deeper consideration of the relationships that propel trade. This experience reminds us that negotiating forums are products of their evolution. Whereas the UNFCCC began as a massively inclusive institution, other agreements such as the WTO grew gradually over time, gaining members and strengthening commitments.

The WTO offers benefits of membership in exchange for sometimes significant concessions to join. Countries outside the regime must weigh these when they decide whether to seek entry. Once in, however, the existing members may make it difficult for other countries to enter and may, as is now apparent in the stalled Doha Round, stymie resolution of sensitive issues.

In contrast, climate negotiations involve a heady mix of core interests that are fundamentally resistant to change. Industrialized countries face the prospect of voiding energy decisions made decades ago or investing today in low-carbon alternatives that some believe to be costly. Countries rich in fossil fuels perceive challenges to their economic viability. Some countries, particularly those most vulnerable to rising sea levels, consider these negotiations a matter of survival. Others may believe they are asked to make current investments with uncertain payoffs. In the case of non-Annex I countries, various benefits and potential infusions of money are offered as incentives. The deadlock is due to a number of factors—among them, the inability of some of the biggest per capita emitters to make formal commitments—and deep equity concerns rooted in historic emissions responsibilities. Each of these positions involve fundamental perceptions of self-interest pitting long-term survival against short-term inertia.

k. Mexico and Papua New Guinea introduced a proposal to change the rules of procedure in the UNFCCC. See <http://unfccc.int/resource/docs/2011/cop17/eng/04r01.pdf>

Moving away from a narrow focus on formalities might help unlock this conundrum. Countries that recognize the need for action or are willing to make formal commitments could join together to resolve specific issues, either on a geographic or functional basis. Their interests in joining might vary. National interests might be easier to accommodate on a smaller—for example, regional—scale of interaction. In a variety of settings, relevant countries can participate or not, as they choose, with voting rules that do not permit one-country vetoes. The latter always exist anyway, as countries can choose to sign and ratify or not.

Is there value in decoupling negotiations and outsourcing issues to other parts of the regime?

The argument for separating negotiating issues among different agreements, forums, or even the Parties themselves is the possibility that, when negotiation in one venue stalls, another can proceed. When there is participant overlap between various forums, discussions in one can inform another, helping to address the interdependence among issues. Political consensus-building can be separated from more specific negotiations. One or more forums can be smaller testing grounds of tools that might be applied later to larger numbers of countries, as the European Union proved when it instituted its emissions trading program, which has since become a model for other jurisdictions. Confidence can build in one context and can spill over to other related negotiations. The various component parts can become stepping stones toward bigger or more integrated agreements. Keohane and Victor (2010) call this a regime complex.³¹

The agreements for addressing weapons have numerous venues for interaction and resolution of discrete sets of issues. The NPT enshrines an agreement that discourages nuclear weapons and helps nations to use nuclear energy for peaceful purposes. The CTBT prohibits nuclear tests with an explosive yield. The Treaty Limiting Anti-ballistic Missiles, SALT, and successive agreements have placed limits and constraints on nuclear arsenals, and so forth.

No single agreement manages all the myriad nuclear challenges. Still other treaties manage other global weapon threats, such as the Chemical Weapons Convention (CWC), which bans development, manufacture, sale, storage, and use of chemical weapons. And the parties to each agreement differ. Some narrow the negotiating field to key actors and provide opportunities to work out relationships and decisions in ways that could be modeled in subsequent negotiations.

A variety of forums allow the development of negotiating relationships for key actors to interact and for give and take. As Blechman and Finlay note in Chapter 2, these forums allow a form of flexibility and relationship building not found in formal approaches to complex threats, which “can be laborious and politically difficult and take a very long time to complete.”

“Outsourcing” issues is one way to achieve this decoupling. Stalled negotiating issues could be exported for management to other existing or specially created parts of an existing regime because these parts might deal with them more handily or because outsourcing reduces the burden of attaining ratification. Outsourcing could take place in separate and independent multinational agencies, which could carry out a narrower mandate on which there is general agreement.

One model for outsourcing is the management of monitoring, verification, and implementation in the weapons regime. The IAEA’s assignment is to establish and monitor safeguards on peaceful nuclear facilities, ensuring that they and the fissile materials they use are not being diverted to weapon programs. The IAEA enters into comprehensive safeguards agreements with signatories to the NPT. Overtime, IAEA’s demonstrated competence has allowed it to gain the confidence of countries and thereby to increase the reach of its inspection function. The IAEA eventually engaged 103 countries in adding “additional protocols” to their safeguard agreements, which give the IAEA further powers to conduct inspections on a challenge basis. On balance, the IAEA has been

able to establish independent credibility and serve a unique monitoring function.¹

Examples of this kind of specialization are found, as well, in economic regulations. Various international organizations, for example, address intellectual property, labor standards and health issues, and related monitoring activities. Distribution of functional tasks among different organizations is standard simply because there are too many issues to be addressed in a single forum.

One important caveat from the weapons regimes is noted by Blechman and Finlay: This type of implementing agency, like the IAEA, must be “well resourced and protected politically. It [needs] a professional staff and the freedom to operate with integrity and in a professional manner.” It also must be able to “challenge government when warranted by the facts” and requires “authorities sufficient to the task with which it is charged.” In a sense, the organization must be somewhat insulated from the political back-and-forth that exists in international negotiations. This allows the organization to remain effective, if sometimes only partially, while consensus builds or when diplomatic gridlock ensues.

In trade agreements, insulation is observed in legal dispute settlement before WTO panels and the Appellate Body. Proceedings operate independently of negotiations, albeit within the same organization. Indeed, the existence and relative efficacy of a formal dispute settlement mechanism provides an important measure of relative institutional independence that builds trust and reliance.

The UNFCCC to some extent already employs a hybrid approach that contains a centralized forum for political negotiations through

1. The IAEA has not been immune to criticism; western nations thought the IAEA should have pressed Syria to permit a prompt inspection of the site where a reactor, which had been under construction in 2007, had been destroyed by an Israeli air strike, in order to obtain soil samples that could prove radioactive materials had been present. Some critics say the IAEA's location within the United Nations makes it more timid than it should be in challenging powerful interests, but there are broader political interests at stake. The agency's leadership maintains that it must be cautious so as not to antagonize large blocs of states, thereby limiting its ability to operate effectively.

the Framework Convention and parallel negotiating tracks within that forum. Some specific tasks, such as science review, are outsourced to specialized bodies beyond the UNFCCC. All, however, operate within the U.N. rubric.

The benefits of consolidation are obvious. In one sense, the UNFCCC negotiation is efficient: All issues are negotiated in parallel but then consolidated with a central place for their resolution. That these issues are often dependent on one another can make it difficult to resolve them in isolation; the benefit of a single forum is that negotiators can see how one part of the agreement affects another. Certainly, having issues separate but linked together can facilitate some forms of deal making. Developed countries at the Cancun COP agreed to establish the Green Climate Fund in exchange for an agreement among developing countries to launch a process to strengthen MRV rules. Moreover, there is an argument that certain kinds of issues simply cannot separately be resolved. The issue of determining robust mitigation targets has become intertwined in the desire of lesser developed economies to obtain comprehensive commitments from developed countries to finance transformative low-carbon technologies.

Although a single comprehensive forum where every party formally has equal voting weight is an imperfect tool for climate stabilization, it has provided a space for weaker parties to draw attention to their legitimate but undervalued concerns. In the UNFCCC, the small island states have used this platform to draw attention to the direct threats of rising sea levels and the potential in some cases of losing their homelands, despite their relatively miniscule contribution to global GHG emissions. These island states used this platform, together with an alliance with the European Union, to achieve specific outcomes at the 17th Conference of the Parties (COP 17) in Durban, South Africa.

The downside of linking issues is, as noted, the potential to divert from the core objective of GHG reductions. Also, a single process with equalized voting makes it possible for a single party or small

groups of like-minded countries for whom greenhouse gas restrictions might be challenging to block overall progress or to use their more narrow interests to divert from more general agreement.³²

Might the UNFCCC itself be re-envisioned as a broad negotiating forum to spin off specific functions and roles to independent or quasi-independent bodies? This would be similar to how the NPT is one part of a broad set of institutions with IAEA, the NSG, and others assigned more specific tasks in the control of exports of nuclear materials and equipment. These tasks are agreed to by the member nationals through processes defined by each organization's charter. If it were to follow this model, the UNFCCC could continue intact, deciding broad principles, but allow some breathing space for managing specific functions outside the process.

Building on this, it is possible to imagine peeling off other manageable tasks—for example the collection of country GHG inventories and giving the bodies responsible greater or even complete independence. They could be given their own management and funding structures and could potentially create their own bureaucracies.

While often criticized for resisting change, bureaucratic inertia in this context could help insulate organizations and their work from the more variable politics of the international negotiation process. Over time, several subgroups might develop competencies that further the overall goal of emissions reduction. As they develop independent reputations for competency, and thereby a level of trust, their responsibilities might increase to meet needs as they develop.

For example, there has been considerable discussion about covering certain types of greenhouse gases within the existing mechanism of the Montreal Protocol, complementing efforts under the UNFCCC.³³ The Montreal Protocol proved its worth in controlling substances that depleted stratospheric ozone and is thought to be a relatively simpler vehicle, focused on a distinct set of chemicals rather than entire economies and on the relatively limited number of manufacturers of those substances.

Hydrofluorocarbons (HFCs) are potent greenhouse gases used primarily as “refrigerants, solvents, blowing agents for foams, and as chemical intermediates”³⁴ that could be managed within the Montreal Protocol framework. HFC production and emissions could begin to be phased down in a relatively short period of time by amending the Montreal Protocol, which is considered by some to be more agile and swift.

Despite what appears to be a relatively clear opportunity for achieving GHG reductions in the short term, the proposal to send HFCs to the Montreal Protocol hit a roadblock. There are several theories as to why a few powerful non-Annex I countries have opposed this move.³⁵

Whichever theory one subscribes to—and, of course, gaining a better understanding of the dynamic and the “system issues” behind it is essential as this idea is further explored—by virtue of a set of incentives established in the Kyoto Protocol, the HFC package of issues had become one of many pawns in the multi-dimensional UNFCCC chess game.

Is there a role for variable geometry and informal groupings in the climate regime?

As Cottier describes in Chapter 3, “variable geometry” is being considered as a way to break the current impasse in trade negotiations. This would mean “that every commitment is not necessarily binding on every country.” Members can decide whether they want to join new agreements, and some members may choose to abstain. Specific issues can be resolved by the most relevant countries, and they can move forward, even without the consensus of the full membership.

Thus, trade academics are discussing several potential approaches, aspects of which might be helpful when considering climate negotiations. High on the list is returning to a system of voluntary membership within specialized agreements, as opposed to a comprehensive single undertaking. The concept of “critical mass”

Box 1.2 Black Carbon and the Complexities of Managing a Significant Contributor to Climate Change

How hard might it be to control black carbon through international agreement? Black carbon is not a regulatory blank slate.^m A closer look demonstrates both the promise and the challenges of diversified regulatory forums.

Black carbon, commonly known as soot, is emitted from incomplete combustion of fossil fuels and biomass.³⁶ Black carbon absorbs solar radiation and, depending on its location in the atmosphere, can contribute to or detract from global warming.³⁷ In addition to its impact while airborne, black carbon deposits on glaciers and other ice, accelerating melt.³⁸

Many scientists and climate experts urge the swift control of black carbon. They characterize it as low-hanging fruit, the control of which will bring immediate positive impacts.³⁹ In the scientists' view, acting now could buy time to work on other issues that require major infrastructure changes.

Early calls for action initially focused on the UNFCCC as a venue, but now some proponents are examining other forums, such as the United Nations Environment Programme and the U.N. Economic Commission for Europe's Convention on Long-range Transboundary Air Pollution, in part because black carbon is an aerosol, not a gas, and is significantly different from the six designated Kyoto gases in its sources and impacts.⁴⁰ Nevertheless, climate policy expert David Victor thinks that rapid cooperation and positive results from action on black carbon could spill over to increase the levels of trust and ambition in the larger greenhouse gas negotiations.⁴¹

A significant portion of black carbon emissions is generated in agricultural burning and cook stoves.⁴² Cook stoves have worried health professions for decades.⁴³ They are commonly used indoors. People (especially women and children) breathe in smoke,⁴⁴ which, in turn, contributes to lung and heart diseases and low birth weight. Black carbon is associated with about 1.9 million deaths annually, largely among women and children.⁴⁵ Existing efforts to reduce these damages include national efforts in many countries and ongoing research and attention from the World Health Organization,⁴⁶ nongovernmental organizations

(box continues on next page)

m. For example, the U.N. Environment Program has for years worked to reduce black carbon pollution. See: "Pollution and Global Warming: Climate Change in Black and White." *The Economist*, February 17, 2011. <http://www.economist.com/node/18175423>.

Box 1.2 Black Carbon and the Complexities of Managing a Significant Contributor to Climate Change (continued)

(NGOs), such as the Global Alliance for Clean Cookstoves,⁴⁷ church groups,⁴⁸ and others. Moreover, the Indian and Chinese governments engaged in massive efforts during the 1980s to replace inefficient stoves with improved stoves that were, ideally, more efficient and less polluting.⁴⁹ However, there have been setbacks. For example, after the Indian effort, follow-up surveys indicated that only half of the disseminated stoves remained in use.⁵⁰

The problem has not been lack of attention; it has been the difficulty of convincing women in approximately 500 million households globally and a wide variety of cultures to change how they traditionally cook food.⁵¹

In this crowded field, should this issue be treated as a climate issue with health co-benefits or as a health issue with climate co-benefits? Is it more like the International Maritime Organization setting fuel standards for ocean-going vessels—an issue better dealt with by outsourcing it to a more appropriate body?

A major argument for resolving this issue outside of the context of climate negotiations turns on a point of relevant history. In the politics of climate negotiations, the role of cook stoves triggers the “defensiveness and misunderstanding, which hinder the rational discussion of proposals,” referenced by Ghosh and Woods (2009).⁵² These are deep divisions about responsibility for climate change that, in turn, inform negotiating positions. It has been a long-standing position in the developing world that climate change is the historic responsibility of the developed world. The developed world’s focus on black carbon in the context of climate change is perceived as an attempt to divert negotiations from the responsibilities of the wealthy countries. India’s announcement of a task force to consider the issues of black carbon and its impacts on glacial melt suggests a willingness to collect facts and consider this issue. Moreover, India’s experience in its ambitious but ultimately disappointing program in the 1980s to replace cook stoves, cited earlier, might inform a better structured program going forward.

Recently, a step has been made in this direction. On February 16, 2012, the Global Climate and Clean Air Initiative was launched by Secretary Hilary Clinton in order to “spread practical ideas and practices regarding so-called short-lived pollutants, which remain in the atmosphere only for a short time – pollutants such as methane, black carbon or soot, hydrofluorocarbons.”⁵³

would build consensus among countries that play a significant role but would also allow for free riders where they do not significantly distort the agreement.

The GATT in 1947 and the subsequent side agreements negotiated under its umbrella through 1995 are commonly cited as an example⁵⁴ of a loose collection of voluntary, plurilateral⁵⁵ agreements. Under the Tokyo Round Agreements in the 1970s, countries were free to join the side-agreements or abstain, as most developing countries did at that time. Currently, all agreements are mandatory except the plurilateral ones, in particular the Agreement on Government Procurement. Thus, the lessons that many experts and observers draw from GATT's transformation into the WTO is a regime evolving from a loose set of voluntary agreements into a more integrated, comprehensive mandatory regime.⁵⁶

Today, “variable geometry” could make the WTO into an umbrella or framework for a series of smaller or more specific agreements that would suit the needs of a subset of WTO countries and thus, as observer Andrew Crawford says, “a vehicle for some countries to undertake deeper integration or liberalization regarding selected subjects...due to the unwillingness of other members to go along.”⁵⁷ Under this construct, only the countries with a significant role in an issue have an incentive to implement monitoring, reporting, and verification and have the leverage to effectively enforce dispute settlement, which relies on reciprocity. This would allow fewer parties to reintroduce optional, plurilateral instruments. Specific issues might be resolved by the most relevant countries.

One might argue, as Keohane and Victor (2010) do, that diversification in the climate world already exists in the form of a “regime complex”—“a loosely coupled set of specific regimes.”⁵⁸ Thus, elements like the Clean Development Mechanism (CDM) Board, the Global Environment Facility, IPCC, International Renewable Energy Agency, and E.U. Emissions Trading Scheme (and many others referenced by Keohane and Victor) are seen as a multi-layered set of institutions that support and deliver various kinds

of results, some under the overall directions set by the UNFCCC negotiations. This somewhat parallels the trade regime in which direction is set by the WTO, but a variety of institutions, arrangements, and agreements work out the all-important details.

The flaw in this argument is that ultimately, what is needed to resolve the climate impasse is a way to achieve specific reductions; it is hard to imagine any of the listed arrangements gaining the independent traction that might lead to that result. While some of the current arrangements do facilitate reaching overall goals, ultimately they are currently dependent on the UNFCCC making progress as a whole.

Variable geometry might spring from the actions of informal groupings inside the wider regime. The weapons and trade regimes demonstrate that “informal groupings”—influential political groups that lack an underpinning legal instrument—can sometimes do more than build basic consensus and influence work in formal organizations, as important as that is. G-20-type meetings are more likely to attract high-level government officials—finance ministers or heads-of-state whose engagement may be needed to resolve thorny problems and provide commitment for forward motion. Cottier posits that this high level of political engagement is necessary to develop a compelling global agenda.

These same informal groupings also allow “economically and geographically crucial countries to meet” and build a critical mass to resolve an impasse. As Cottier notes, sometimes free riders can be ignored, if the major powers agree and form a critical mass. Informal groupings can also take action, as Blechman and Finlay point out. In 2002, the G-8 pledged US\$20 billion to build down the former Soviet Union’s Weapons of Mass Destruction (WMD) infrastructure. This was one of many ad hoc actions taken to respond to evolving proliferation threats.

In addition, bilateral agreements can play an important role on both the political and technical level. As has happened in the trade arena, bilateral deals may be a substitute, a pilot, or a complement to a global agreement.⁵⁹ While not ideal, interim approaches could demonstrate progress and build trust among countries until the time is right for a more comprehensive agreement. In the climate context, bilateral agreements could be ground for pilot efforts or experiments relating to reporting and verification. On a limited scale, this is already happening as U.S. and European institutions provide satellite maps of land-use changes to assist developing countries in assessing emission trends and the effectiveness of their actions.

The principal negotiating locus for the climate change regime has been the UNFCCC. Other forums have been developed or existing forums used to bring groups of countries together to provide policy guidance or affirm joint principles at a high political leadership level or to convene around particular energy or climate issues. These include the Asia-Pacific Partnership on Clean Development and Climate, the Major Economies Forum on Energy and Climate (MEF), and the G-20.^{n,60} Bodies at the political level can and do build basic consensus and provide guidance and direction on objectives and on specific areas of concern. For example, the G-8 summer 2009 summit referenced a goal of limiting global average temperature increase to 2 degrees Celsius above pre-industrial levels, and the G-20 communiqué from November 2009 reiterated encouragement for an agreement at UNFCCC negotiations in Copenhagen.⁶¹ But details are then worked out at the UNFCCC.

n. Launched in July 2005, the Asia-Pacific Partnership on Clean Development and Climate is a voluntary partnership among Australia, Canada, China, India, Japan, Korea, and the United States “cooperating in an effort to address increased energy needs and the associated issues of air pollution, energy security, and climate change.” The MEF, launched in March 2009, convenes 17 major economies in an effort to “to facilitate a candid dialogue among major developed and developing economies” and “advance the exploration of concrete initiatives and joint ventures that increase the supply of clean energy while cutting greenhouse gas emissions.” The G-20 was established in 1999 to address international economic matters and in 2009 was designated by its leaders to be “the premier forum for international economic cooperation.” While ostensibly economically focused, the G-20 has also studied, and might further address, climate change and energy issues.

What might be the pathway in the climate context for leveraging the power of informal groupings? The gathering in Copenhagen in 2009 of the United States, Chinese, Indian, Brazilian, and South African heads of state was potentially an informal grouping of some strength and power. While brought together under the auspices of the UNFCCC, this grouping to some extent bypassed the formal UNFCCC procedures, although its results were then presented to the entire COP. This process was not uniformly welcomed,⁶² and, under some interpretations, what happened might have constituted a power play rather than a new grouping. We have yet to see how this might play out over the long term. After a year of angst and uncertainty among negotiators and NGOs,⁶³ important elements of the Copenhagen Accord (a statement) were incorporated into the Cancun Agreements⁶⁴ (a formal decision of the Parties to the Convention) and then further detailed in Durban.⁶⁵

It apparently took the assembled influence of the leaders gathered in Copenhagen to get preliminary commitments toward US\$100 billion per year in funding by 2020 for finance for adaptation, reduction of forest loss and degradation (REDD+), and technology development and transfer. It may take more G-20 or G-8 meetings to bring these commitments to fruition in the form of actual funding. Similarly, it is possible to imagine the MEF stepping up its current role of seeking flexible strategies for reducing emissions to an increasingly stronger quasi-regulatory role of seeking and getting explicit agreements from its participants.

One can argue about the legal implications, but the weapons example demonstrates that practical applications can emerge out of more informal arrangements. And the idea fits Koehane's and Victor's (2010) point about accommodating "patterns of interests (shaped by beliefs, constrained by information, and weighted by power) that diverge to a greater or lesser extent..." versus aiming at a "comprehensive, highly integrated institution."

o. Communications received by the UNFCCC from Parties in regards to the Copenhagen Accord can be found here: http://unfccc.int/meetings/cop_15/copenhagen_accord/items/5276.php.



The challenge of graduation

Graduation is an effort to define a continuous but assured process in which pre-agreed measures and markers would prescribe changes in roles and responsibilities. Rules would be set out in advance to avoid particularized struggles or abrupt or dramatic change. If countries can agree on what these rules might be, differentiated countries could take on new responsibilities and roles at a predefined but gradual pace, better recognizing their unique circumstances and potential contributions, separate from the current vision of a package deal. Thus, “graduation” inherently diversifies the regime. As Cottier notes, the main challenge “is how these different areas can be brought together to the extent necessary and then to work with a bottom-up process in international negotiations.”

Countries might be more accepting of graduation if the rules are established earlier in negotiating relationships, before consideration of new obligations becomes a defense of the status quo for some negotiating parties.

Any agreement that seeks to endure over decades should consider how to respond to changes among participants. Both the weapons and trade worlds show how difficult that is. Nuclear agreements distinguish between countries that have nuclear weapons capability and countries that do not. The distinctions are not predicated on the economic means of the country or its stage of economic development (richer countries were more likely to develop nuclear weapons, yet impoverished North Korea developed them too) but on its level of nuclear capability. Indeed, it was the concern that China had developed nuclear capability in 1964, well before it became today’s economic powerhouse, that motivated countries to negotiate the NPT.

The NPT bargain, freezing the number of countries with nuclear weapons and facilitating development of civilian nuclear capacity, has some similarities to the distinctions captured in the UNFCCC between Annex I and non-Annex I countries. And the concept that countries with particular resources, historic advantages, or

skills might assist developing countries is inherent in a number of UNFCCC threads, particularly discussions about technology transfer and adaptation assistance.

The NPT bargain failed to stop India, Pakistan, Israel, and North Korea from developing nuclear weapons. And there is fear that it is being nibbled away by exceptions. In a much-disputed decision of the George W. Bush administration, the United States agreed to help India fulfill its civilian nuclear aspirations, despite its failure to join the NPT, thus essentially creating a new category as an NPT non-signatory that nonetheless is permitted to engage in nuclear trade. Not surprisingly, Pakistan wants to be placed in the same category, essentially challenging the core balancing act that articulated acceptable nuclear behavior. The NPT faces serious challenges as the global balance of political and economic power shifts away from the Western democracies.

The WTO also struggles to accommodate inevitable changes in the capabilities and economic power of member countries. Diversification exists in the form of individual schedules for tariff and services bindings. Levels of commitment are commensurate with the needs of countries and levels of social and economic development, agreed at in bilateral or multilateral negotiations. “Graduation” is discussed as a way to manage fundamental changes within the WTO membership.

The UNFCCC currently does differentiate among members. Indeed, the divide between Annex I and non-Annex I Parties to the Convention and its import as played out in the Kyoto Protocol has historically formed the core of negotiations. These are based on developing–developed world distinctions. However, the world is rapidly changing from a bipolar to multi-polar world. Economies, notably in Asia, have emerged as industrial dynamos. Historical responsibility and the failure of some Annex I countries, in particular the United States, to “take the lead” remain fundamental problems within the climate regime.



What is also clear is that the ultimate goal of stabilizing greenhouse gas concentrations and consequently preventing dangerous anthropogenic interference with the climate system cannot be achieved solely on the basis of actions in Annex I countries. Emissions reductions are required from all major emitters, and progress toward these goals must engage the considerable innovation, entrepreneurial skill, and dynamism of the emerging economies. Today, China has the highest overall (albeit not per capita) global level of carbon dioxide emissions from fuel consumption, and has also become a leader in producing low-carbon technologies.

Graduation has long been debated in climate negotiations, including during the creation of the Kyoto Protocol. Nevertheless, with the possible exception of the voluntary Copenhagen Accord emission reduction pledges, there is no current middle ground between Annex I and non-Annex I countries' responsibilities, particularly for the introduction of an emissions cap. An approach that allows graduation from voluntary agreements to mandatory packages might allow the regime to take up new challenges and produce new legal instruments without the burden of trying to carry all countries along immediately. It would be a way to recognize the growing distinctions between China and India, on the one hand, and parts of Africa and the small island states, on the other.

The Copenhagen Accord takes the first step toward graduation, by encouraging independently constructed emission reduction pledges, which could over time become more harmonized, could be grouped so that countries with similar commitments might be advanced toward even more ambitious targets, and might introduce some level of monitoring to assure compliance. In terms of other climate-related responsibilities, robust economies could, for example, gradually move from a recipient of assistance to a donor, linked to criteria of economic growth. Developing countries with growing economies could gradually shift to increasingly explicit responsibilities, or their shifting responsibilities might be acknowledged as they become more powerful developers and vendors of technology, no longer needing assistance in that area. Levels of commitment could be set to better coincide with needs and

changing levels of social and economic development. In principle, criteria could also accommodate declining economies.

Food for Thought

The regimes that have emerged to control greenhouse gases, manage WMDs, and promote economic growth each have their own history, culture, and unique characteristics. Transplanting lessons from one to another requires modesty and sensitivity, not the least because every regime, including climate, is informed by its own negotiating history and experience and is, to some extent, a creature of the culture that develops therein.

However, careful consideration of the challenges that the more mature weapons and economic regimes have faced, and the ways in which progress was eked out, do provide clues that could move forward global efforts to promote climate-compatible development. These timely issues are worthy of further thought and research as we go forward.

Achieving a vision, piece by piece

The UNFCCC sets out a vision and a formula for the organization of responsibilities among countries going forward. Evidence from the weapons and economic regimes demonstrates additional methods to achieve that central vision. Sometimes, common agreement about the overall goals and objectives can trigger a series of interactions to resolve more narrow issues and challenges. When complete agreement is not possible, partial limits or smaller agreements can still be beneficial and become a starting point for more robust achievements. Venues can be developed where specific decision making can avoid being detoured by entanglement in larger webs.

Multiple but more narrow interactions can continue within the umbrella of a single organization, developing its own form of variable geometries so that a series of smaller or more specific agreements might be developed to suit the needs of a subset of appro-

appropriate countries. Or, entirely separate configurations of interested parties can either continue independently or eventually converge back into an umbrella agreement.

The fact that each specific agreement might resolve only a part of the overall climate challenge need not be seen as a liability. Stopping nuclear tests in the atmosphere did not end the nuclear arms race, but it ended the human health damage from radiation released by nuclear explosions. Although a comprehensive ban on nuclear testing would have been preferable, the technology available at the time could not have verified a ban on underground nuclear tests. It took 33 more years to complete a comprehensive test ban treaty. Early progress was only possible by virtue of the willingness of all the key nations to accept stepwise advancement. While it might have been tidier to move forward to a comprehensive conclusion of negotiations, the results so far can be counted a significant success.

In the climate context, more narrow initial agreements on technology dissemination and financing, forests, adaptation, and even more narrow mitigation agreements between willing countries might at least begin to satisfy many countries' concerns and permit a sense that the international community can make headway, step by step. If countries already disproportionately suffering from the burden of climate change can be assured of an enabling environment for tackling their significant challenges and the existence of resolve to do so, it might clear the way for other groupings to concentrate on some subset of emissions reductions.

Climate negotiators have had great difficulty, somewhat resolved in Durban, determining whether to continue the current Annex I and non-Annex I distinctions among countries set out in the UNFCCC and the Kyoto Protocol. Ideas emanating from the trade regime suggest that this need not be an either-or kind of resolution but, instead, that this problem can be parsed through the prism of time. The concept of graduation makes the case for establishing prearranged stepping-stone rules to increase coun-



tries' responsibilities in the course of treaty relationships. If, in a period of several decades, countries can move from dire poverty to become world-class economic engines, there should be a way to recognize their movement on a continuum among countries that need assistance to address climate change and countries that can provide leadership in this task.

Recognizing differences among countries

Explicitly recognizing certain differences among countries might also open pathways toward creative innovation and experimentation to expand the tools or capabilities for addressing specific issues. For example, coalitions could join like-minded countries to think together about productive problem solving that fits their historic ways of addressing big tests and that takes account of their unique government and legal cultures. China's maxim for how it managed its successful economic transition might guide this: Without a ready model for this unprecedented shift, the Chinese instead "crossed the river by feeling the stones." China developed the necessary institutions along the way.

The legal systems of the United States and Europe, different as they are from each other, are more comparable to one another than to the Chinese system. While all profess to be market economies, the nature and functioning of their markets differ considerably. All these differences could be taken into account in devising domestic tools for managing greenhouse gas reductions. Recognizing and working with a variety of distinctions might provide a stronger foundation on which to engage individual countries as they tackle this challenging goal.

Formalities, ratification, and handling holdouts

If major emitters like the United States fail to join a legally binding agreement, should this mean the kiss of death for achieving emission reduction goals? Does it preclude making other kinds of progress?

The experience of the weapons and economic regimes demonstrates reasons to keep talking and even conclude agreements, even though major powers may stall or sit on the sidelines. This can happen by having the willing negotiators set out a pathway that the holdouts eventually join, or by acknowledging the possibility of parallel actions leading to the same desired result.

The first case is demonstrated by the E.U. Emissions Trading Scheme. Although the United States was active in devising the Kyoto Protocol with its market-based instruments (even as then U.S. President Bill Clinton was already on notice that he could not sell the plan to the Senate), the United States never formally joined Kyoto. The European Union eventually took the lead in implementing the CDM, essentially road-testing ideas that previously had largely been economic theory with very limited practical experience.⁶⁶ The experience gained in Europe helped states in the United States devise their own greenhouse gas markets and provided guidance during U.S. consideration of national legislation. E.U. action has also provided useful information about carbon pricing.

Perhaps part of unlocking the vast climate challenge is to let a kind of creative momentum develop that can result from multiple intersecting efforts. What starts as voluntary may, over time, become mandatory as hesitant parties decide they like what they see and are provided evidence of practical ways to achieve the goals set out in vision statements or because their circumstances change. As Blechman and Finlay suggest in Chapter 2, international norms have the potential to gain strength until they become the “only acceptable form of behavior,” and in the best case, lead toward unilateral actions that complement the global objectives.

Leveraging opportunity

Few successful regimes seem to have developed in a linear process. Sometimes, events that encourage government and private-sector involvement are unpredictable and happen by virtue of flexibility and opportunism. Unexpected events in arms control have helped revive or advance an international agenda.

The breakdown of the Soviet Union made possible a unilateral U.S. initiative to reduce and destroy tactical nuclear weapons deployed overseas and on warships and submarines. The U.S. efforts were reciprocated by the new Russian leadership within a week. A similar round of reciprocal reductions occurred a year later. The flexibility that both countries showed to adapt to changing circumstances, their willingness to operate outside formal negotiating and treaty-making processes, and joint anxiety about the consequences of inaction likely contributed to the success of these actions. U.S. Senators Nunn and Lugar leveraged the same precipitating event to develop an effort to secure nuclear weapons and materials and to avoid situations in which experts might sell their services to new nations seeking to build WMDs.

In international economic relations, the attacks on the World Trade Center and the Pentagon on September 11, 2001, were one key input that politically triggered the Doha Agenda of the WTO. Without the event, it is unlikely that members would have been willing and ready to agree to a new trade round only six years after the completion of the Uruguay Round and with much left to implement. The past experience and current difficulties in Doha also hold a warning. The seeds of failure may be planted if opportunities are leveraged without sufficient substance and used without sufficient long-term backing.

It remains to be seen whether climate change could present such a single, catalyzing event to supercharge action. It is characteristically a relatively slow process (from a human perception rather than a geological point of view), measured over decades and centuries. The science is complex, and because of that, scientists are often hesitant to attribute individual extreme weather events to climate change.⁶⁷ Even after years of research, such ties are commonly expressed in relatively abstract ways, such as temperature rise contributing to increased risk or intensity, or a “fractional attribution” rather than a direct, causal link.⁶⁸



However, other events can be leveraged. It was not a nuclear weapons accident or attack that led to the unilateral reductions in the early 1990s. Rather, it was the collapse of the Soviet Union and the possibility of loose weapons materials making their way into the wrong hands.

Similarly, the climate regime could look toward other seemingly unrelated events—including new governments, technological leaps, economic changes—as opportunities to promote sustainable development and climate change mitigation and adaptation. Interesting in this regard is the sudden expansion in extracting natural gas found in shale, which is proving to be an increasingly cheaper—albeit still with open questions about environmental risk and GHG impacts—substitute for coal.

Players in the climate regime should recognize that actions taken to leverage these precipitating events might not occur within pre-existing negotiating frameworks. The United States and Soviet Union's reductions were matching unilateral efforts. While some of these efforts relied on existing verification mechanisms, they were not subjected to the complex negotiating process.^{p,69}

In sum, having a framework of relations and venues to communicate at opportune moments is not a guarantee of effective action but has facilitated creative approaches to exploit unique opportunities. When the U.S.S.R. fell, for example, its nuclear weapons were located in four new nations and fissile materials in several others. Due to their existing framework of cooperation, the U.S. and Russia were able to work together to consolidate all the weapons in Russia and, with the help of private organizations, to prevent the fissile materials from falling into the hands of rogue nations or terrorist organizations. The latter effort evolved into a broader array of cooperative programs, all anchored in ongoing relationships over many years.

p. Some (i.e., tactical weapon reductions) were not verified at all and, apparently, the Russians did not completely fulfill their commitments.

Trust and verification

The theme of trust runs through all these ideas. An important aim of any negotiation is to develop trust that can support increasingly extensive and deep commitments. This is critically important in the case of reducing GHG emissions. Greenhouse gas reductions require deep changes, affecting how economies are constructed and how citizens are housed, clothed, fed, employed and transported—the very basics of day-to-day existence. To date, many countries may see the long-term benefits of greenhouse gas reductions but apparently fear that taking action now will put them at an economic disadvantage.

Countries that associated with international regimes in order to edge back from relationships predicated on mutual assured destruction or economic wars of survival confronted a similar dynamic. Nations' willingness to make concessions to gain the benefits of agreement have been achieved only after decades of concrete interactions that permitted the growth of trust and mutual comfort levels. Small steps led to relationships that could be broadened, or that could even take leaps forward, as was unexpectedly possible when the Soviet Union fell. Greater experimentation, which is possible through more diverse configurations and multiple agreements, might suggest new ways to achieve robust global action, as well as verification of those actions.

Verification is a critically important part of building trust, but the history of weapons and trade regimes emphasizes that joint efforts to verify must be built step by step, rather than all at once. Once the basics are in place, they can improve and be made more stringent as the various actors gain confidence in their application and use and see the advantage of compliance in achieving their own interests. In the future of the climate regime, countries might increasingly be willing to engage in mutual actions to monitor and verify whether everyone is taking the bold actions necessary to phase out certain fossil fuels and modify the way they use others.

Without a crystal ball, we cannot now say what additional benefits might be harvested opportunistically down the road to advance the climate agenda. But we do know that having a tested framework of relationships and extended communications in place at the highest levels makes it easier to act quickly, as George H.W. Bush and Mikhail Gorbachev did when the Soviet Union collapsed. The existence of these long-standing relationships—a very human factor—allowed the two leaders to engineer parallel unilateral initiatives for a near-immediate, significant reduction in deployed and potentially destabilizing tactical nuclear weapons. Being similarly positioned might be useful as societies begin to experience the larger impacts of climate change and new targets of opportunity reveal themselves.

Taken together, an important lesson is that the perfect should not be the continuing enemy of the good. Analysts must acknowledge that the world has avoided nuclear holocaust, but also recognize that the five nuclear powers that existed at the time the NPT was signed are now nine with a tenth looming on the horizon. Trade negotiations have engineered a global economy, but are currently stuck as new entrants to the regime navigate the vast economic and political differences among participants.

Finally, climate negotiations must extend beyond the community of environmental experts if any real progress is to be made. While world leaders have generally prioritized weapon negotiations, advocates of economic cooperation had to work to make their concerns a high priority on the agendas of participating countries. Climate advocates would do well to position issues in a manner that engages the attention of more powerful decision-makers. In the long run, the climate regime will benefit as foreign, defense, and finance ministers increasingly come to understand the implications of climate change for their own portfolios and thereby help build a demand for action at the highest levels of their countries.



CHAPTER 1 REFERENCES

Daniel Bodansky and Elliot Diringer, *The Evolution of Multilateral Regimes: Implications for Climate Change*. Advancing the International Effort Against Climate Change (Arlington, VA: Pew Center on Global Climate Change, December 2010), <http://www.pewclimate.org/publications/report/evolution-multilateral-regimes-implications-climate-change>.

Abram Chayes and Antonia Handler Chayes, *The New Sovereignty: Compliance with International Regulatory Agreements* (Cambridge, MA: Harvard University Press, 1998).

Arunabha Ghosh and Ngaire Woods, "Governing Climate Change: Lessons from Other Governance Regimes," in *The Economics and Politics of Climate Change*, by Dieter Helm and Cameron Hepburn (New York: Oxford University Press, 2009), 454–476.

William Hare, Claire Stockwell, Christian Flachsland, and Sebastian Oberthür. 2010. "The Architecture of the Global Climate Regime: a Top-down Perspective." *Climate Policy* 10: 600–614.

Robert O. Keohane and David G. Victor, *The Regime Complex for Climate Change*, Discussion Paper, The Harvard Project on Climate Agreements Discussion Paper Series (Cambridge, MA: Harvard Project on International Climate Agreements, Belfer Center for Science and International Affairs, Harvard Kennedy School, January 2010), http://belfercenter.ksg.harvard.edu/publication/19880/regime_complex_for_climate_change.html.

Katherine Michonski and Michael A. Levi, "Harnessing International Institutions to Address Climate Change." Working paper (New York: Council on Foreign Relations, March 2010), <http://www.cfr.org/climate-change/harnessing-international-institutions-address-climate-change/p21609>.

David G. Victor, Kal Raustiala, and Eugene B. Skolnikoff, eds. *The Implementation and Effectiveness of International Environmental Commitments: Theory and Practice*, Global Environmental Accord: Strategies for Sustainability and Institutional Innovation (Cambridge, MA: International Institute for Applied Systems Analysis, The MIT Press, 1998).

Edith Brown Weiss and Harold K. Jacobson, *Engaging Countries: Strengthening Compliance with International Environmental Accords* (Cambridge, MA: MIT Press, 1998).

CHAPTER 1 ENDNOTES

1. The United Nations General Assembly, *Protection of Global Climate for Present and Future Generations of Mankind*, A/RES/45/212, 1990, <http://www.un.org/documents/ga/res/45/a45r212.htm>.
2. UNFCCC Secretariat, "Status of Ratification of the Convention," *United Nations Framework Convention on Climate Change*, 2011. http://unfccc.int/essential_background/convention/status_of_ratification/items/2631.php.
3. Ibid.; UNFCCC Secretariat, "Meetings — COP 13, Welcome Message, International Calls for Action," COP 13, CMP 3, SB 27 & AWG 4, September 24, 2007, http://unfccc.int/meetings/cop_13/welcome_message/items/4210txt.php; Daniel Bodansky and Elliot Diringer, *The Evolution of Multilateral Regimes: Implications for Climate Change*; UNFCCC Secretariat, "Administrative and Financial Matters," *United Nations Framework Convention on Climate Change*, n.d., http://unfccc.int/parties_and_observers/parties/administrative_and_financial_matters/items/3009.php.
4. United Nations, *United Nations Framework Convention on Climate Change, FCCC/INFORMAL/84*, 1992, <http://unfccc.int/resource/docs/convkp/conveng.pdf>.
5. Scott Barrett and Robert Stavins. 2003. "Increasing Participation and Compliance in International Climate Change Agreements." *International Environmental Agreements: Politics, Law and Economics* 3, no. 4 (December 1, 2003): 349–376.
6. Hilary McMahon and Remi Moncel, "Keeping Track: National Positions and Design Elements of an MRV Framework." Working paper (Washington, DC: World Resources Institute, June 2009), <http://www.wri.org/publication/keeping-track>.
7. Clare Breidenich and Daniel Bodansky, *Measurement, Reporting, and Verification in a Post-2012 Climate Agreement*, Advancing the International Effort Against Climate Change (Arlington, VA: Pew Center on Global Climate Change, April 2009), <http://www.pewclimate.org/report-mrv>; Jan Corfee-Morlot, Bruno Guay, and Kate M. Larsen, *Financing Climate Change Mitigation: Towards a Framework for Measurement, Reporting and Verification* (Paris: International Energy Agency, Organisation for Economic Co-operation and Development, November 4, 2009), <http://www.oecd.org/dataoecd/0/60/44019962.pdf>.
8. UNFCCC Secretariat, "Parties & Observers," *United Nations Framework Convention on Climate Change*, n.d., http://unfccc.int/parties_and_observers/items/2704.php; *Kyoto Protocol to the United Nations Framework Convention on Climate Change*, 1998, <http://unfccc.int/resource/docs/convkp/kpeng.pdf>.
9. Jacob Werksman. 1999. "Compliance and the Kyoto Protocol: Building a Backbone into a 'Flexible' Regime." *Yearbook of International Environmental Law* 9, no. 1 (January 1, 1999): 48–101.
10. UNFCCC Secretariat, "Mechanisms Under the Kyoto Protocol," *United Nations Framework Convention on Climate Change*, n.d., http://unfccc.int/kyoto_protocol/mechanisms/items/1673.php.
11. *United Nations Framework Convention on Climate Change*. "Draft Decision - /CP.17: Establishment of an Ad Hoc Working Group on the Durban Platform for



- Enhanced Action: Proposal by the President". UNFCCC Secretariat, December 12, 2011. http://unfccc.int/files/meetings/durban_nov_2011/decisions/application/pdf/cop17_durbanplatform.pdf.
12. William Hare, Claire Stockwell, Christian Flachsland, and Sebastian Oberthür. 2010. "The Architecture of the Global Climate Regime: a Top-down Perspective." *Climate Policy* 10: 600–614; Daniel Bodansky and Elliot Diringer, *The Evolution of Multilateral Regimes: Implications for Climate Change*; Robert O. Keohane and David G. Victor, *The Regime Complex for Climate Change*.
 13. Edith Brown Weiss, "Understanding Compliance with International Environmental Agreements."
 14. David G. Victor, Kal Raustiala, and Eugene B. Skolnikoff, *The Implementation and Effectiveness of International Environmental Commitments: Theory and Practice*; Edith Brown Weiss and Harold K. Jacobson, *Engaging Countries: Strengthening Compliance with International Environmental Accords*; Abram Chayes and Antonia Handler Chayes, *The New Sovereignty*.
 15. Remi Moncel and Kelly Levin. "Transparency and Accountability (MRV) in the Durban Climate Deal." World Resources Institute. WRI Insights, February 13, 2012. <http://insights.wri.org/news/2012/02/transparency-and-accountability-mrv-durban-climate-deal>.
 16. United Nations, *UN Framework Convention on Climate Change*.
 17. Ibid.
 18. Ibid.
 19. Edward Wong and Keith Bradsher, "China Joins U.S. in Pledge of Hard Targets on Emissions," *The New York Times*, (November 27, 2009), sec. Science / Environment, <http://www.nytimes.com/2009/11/27/science/earth/27climate.html>; Randeep Ramesh, "India to Reduce Carbon Intensity by 24% by 2020," *Guardian.co.uk*, December 2, 2009, sec. Environment | Carbon emissions, <http://www.guardian.co.uk/environment/2009/dec/02/india-carbon-intensity-target>.
 20. Yvo de Boer, "Copenhagen a Significant Advance: UN Negotiator," Television, Australian Broadcasting Corporation (July 16, 2010), <http://www.abc.net.au/lateline/content/2010/s2955162.htm>.
 21. Lisa Friedman, "A Near-Consensus Decision Keeps U.N. Climate Process Alive and Moving Ahead," *ClimateWire*, via *The New York Times* (December 13, 2010), sec. Business Day / Energy & Environment, <http://www.nytimes.com/cwire/2010/12/13/13climatawire-a-near-consensus-decision-keeps-un-climate-p-77618.html>.
 22. "Briefing Note on the 'legal Form' of a New Climate Agreement" (Foundation for International Environmental Law and Development (FIELD) and Mary Robinson Foundation - Climate Justice (MRFJC), February 2011), http://www.field.org.uk/files/legal_form_of_a_new_climate_agreement_cs.pdf.
 23. Ibid.
 24. William Hare, Claire Stockwell, Christian Flachsland, and Sebastian Oberthür. "The Architecture of the Global Climate Regime: a Top-down Perspective."
 25. Daniel Bodansky and Elliot Diringer, *The Evolution of Multilateral Regimes*:



Implications for Climate Change.

26. *The Case for the Comprehensive Test-Ban Treaty: Some Key Points*, Fact sheet (Washington, D.C.: Bureau of Arms Control, Verification and Compliance, U.S. State Department, September 1, 2011), <http://www.state.gov/t/avc/rls/171305.htm>.
27. "The CTBT Verification Regime Put to the Test - the Event in the DPRK on 9 October 2006" (Preparatory Commission for the Comprehensive Nuclear-Test-Ban Organization, September 4, 2007), <http://www.ctbto.org/press-centre/highlights/2007/the-ctbt-verification-regime-put-to-the-test-the-event-in-the-dprk-on-9-october-2006/>; "CTBTO's Initial Findings on the DPRK's 2009 Announced Nuclear Test" (Preparatory Commission for the Comprehensive Nuclear-Test-Ban Organization, May 25, 2009), <http://www.ctbto.org/press-centre/highlights/2009/ctbtos-initial-findings-on-the-dprks-2009-announced-nuclear-test/>.
28. José Goldemberg. "The Road to Rio." In *Negotiating Climate Change: The Inside Story of the Rio Convention*, edited by Irving M. Mintzer and J. Amber Leonard, 175–186, (Cambridge, United Kingdom and New York, NY, USA: Cambridge University Press, 1994).
29. James K. Sebenius. "Towards a Winning Climate Coalition." In *Negotiating Climate Change: The Inside Story of the Rio Convention*, edited by Irving M. Mintzer and J. Amber Leonard, 277–320, (Cambridge, United Kingdom and New York, NY, USA: Cambridge University Press, 1994).
30. International Centre for Trade and Sustainable Development, "With Easter Looming, WTO Members Acknowledge 'Huge Gaps' on Doha," *Bridges Weekly Trade News Digest* 15, no. 11 (March 30, 2011): 1–4.
31. Robert O. Keohane and David G. Victor, *The Regime Complex for Climate Change*.
32. Arunabha Ghosh and Ngaire Woods, "Governing Climate Change: Lessons from Other Governance Regimes."
33. Mario Molina, Durwood Zaelke, K. Madhava Sarma, Stephen O Andersen, Veerabhadran Ramanathan, and Donald Kaniaru. 2009. "Reducing Abrupt Climate Change Risk Using the Montreal Protocol and Other Regulatory Actions to Complement Cuts in CO₂ Emissions." *Proceedings of the National Academy of Sciences* 106, no. 49: 20616–20621; David Doniger, "Progress on HFCs, the Super Greenhouse Gases? - Good News and Bad News from Bangkok," Natural Resources Defense Council, Switchboard, November 12, 2010, http://switchboard.nrdc.org/blogs/ddoniger/progress_on_hfcs_the_super_gre.html; "Phasing Down Use of Hydrofluorocarbons (HFCs) Under the Montreal Protocol" (Environment Canada, March 15, 2011), <http://www.ec.gc.ca/default.asp?lang=En&n=714D9AAE-1&news=770E5923-EB21-4A4F-9FF2-7BD7EA7861DD>; Stephen O. Andersen and K. Madhava Sarma, *Making Climate Change and Ozone Treaties Work Together to Curb HFC-23 and Other "Super Greenhouse Gases,"* NRDC Issue Paper, November 2010.
34. Jean Bogner, Mohammed Abdelrafie Ahmed, Cristobal Diaz, Andre Faaij, Qingxian Gao, Seiji Hashimoto, Katarina Mareckova, Riitta Pipatti, and Tianzhu Zhang, "Waste Management: Fluorinated Gases: End-of-life Issues, Data and Trends in



- the Waste Sector,” in *Working Group III: Mitigation of Climate Change*, ed. Bert Metz et al., vol. 3, 4 vols., 4th ed., IPCC Fourth Assessment Report: Climate Change 2007 (Cambridge, United Kingdom and New York, NY, USA: Cambridge University Press, 2007), 606, http://www.ipcc.ch/publications_and_data/ar4/wg3/en/ch10s10-4-8.html.
35. David Doniger, “Progress on HFCs, the Super Greenhouse Gases? - Good News and Bad News from Bangkok.”
 36. Mario Molina, Durwood Zaelke, K. Madhava Sarma, Stephen O Andersen, Veerabhadran Ramanathan, and Donald Kaniaru, “Reducing Abrupt Climate Change Risk Using the Montreal Protocol and Other Regulatory Actions to Complement Cuts in CO₂ Emissions.”
 37. John Seinfeld. 2008. “Atmospheric Science: Black Carbon and Brown Clouds.” *Nature Geosci* 1(1): 15–16.
 38. V. Ramanathan and G. Carmichael. 2008. “Global and Regional Climate Changes Due to Black Carbon.” *Nature Geosci* 1(4) (April 2008): 221–227; S. Menon, D. Koch, G. Beig, S. Sahu, J. Fasullo, and D. Orlikowski. 2009. “Black Carbon Aerosols and the Third Polar Ice Cap,” *Atmospheric Chemistry and Physics Discussions* 9(6) : 26593–26625.
 39. Tami C. Bond and Haolin Sun. 2005. “Can Reducing Black Carbon Emissions Counteract Global Warming?” *Environmental Science & Technology* 39(16): 5921–5926; Mark Z. Jacobson. 2002. “Control of Fossil-fuel Particulate Black Carbon and Organic Matter, Possibly the Most Effective Method of Slowing Global Warming,” *Journal of Geophysical Research* 107: 22; Daniel Bodansky and Elliot Diringer, *The Evolution of Multilateral Regimes: Implications for Climate Change*; ET Bureau, “India Launches Black Carbon Initiative,” *The Economic Times*, April 1, 2011, Online edition, http://articles.economicstimes.indiatimes.com/2011-04-01/news/29370545_1_emissions-global-warming-climate-change-assessment.
 40. Tami C. Bond and Haolin Sun, “Can Reducing Black Carbon Emissions Counteract Global Warming?”; Andrew P. Grieshop, Conor C. O. Reynolds, Milind Kandlikar, and Hadi Dowlatabadi, 2009. “A Black-Carbon Mitigation Wedge,” *Nature Geoscience* 2(8): 533–534; Executive Body of the Convention on Long Range Transboundary Air Pollution, “Decision 2010/2: Implications of the Reports of the Task Force on Hemispheric Transport of Air Pollution and the Ad Hoc Expert Group on Black Carbon”, 2012, http://www.unece.org/fileadmin/DAM/env/documents/2010/eb/eb/eb%20decisions/Decision_2010.2.e.pdf; *Integrated Assessment of Black Carbon and Tropospheric Ozone* (UNEP and WMO, 2011), http://www.unep.org/dewa/Portals/67/pdf/BlackCarbon_report.pdf.
 41. Veerabhadran Ramanathan and David G. Victor, “To Fight Climate Change, Clear the Air,” *The New York Times*, November 27, 2010, sec. Opinion, <http://www.nytimes.com/2010/11/28/opinion/28victor.html>; “Pollution and Global Warming: Climate Change in Black and White,” *The Economist*, February 17, 2011, <http://www.economist.com/node/18175423>.
 42. Tami C. Bond and Haolin Sun, “Can Reducing Black Carbon Emissions Counteract Global Warming?”



43. Burkhard Bilger, "Hearth Surgery: The Quest for a Stove That Can Save the World," *The New Yorker*, December 21, 2009.
44. Majid Ezzati and Daniel M. Kammen. 2002. "The Health Impacts of Exposure to Indoor Air Pollution from Solid Fuels in Developing Countries: Knowledge, Gaps, and Data Needs." *Environmental Health Perspectives* 110(11), <http://ehp03.niehs.nih.gov/article/fechArticle.action?articleURI=info:doi/10.1289/ehp.021101057>.
45. "Global Alliance for Clean Cookstoves," *National Institute of Environmental Health Sciences*, National Institutes of Health, n.d., <http://www.niehs.nih.gov/about/od/programs/cookstoves/index.cfm>.
46. "Environment and Health in Developing Countries," *The Health and Environment Linkages Initiative, World Health Organization*, n.d., <http://www.who.int/heli/risks/ehindevcoun/en/index2.html>.
47. "The Alliance," Global Alliance for Clean Cookstoves, n.d., <http://cleancookstoves.org/the-alliance/>.
48. "Reducing Biodiversity Loss at Cross-border Sites in East Africa," *UNDP-GEF Project Writeups, UNDP*, n.d., http://www.undp.org/gef/portfolio/writeups/bd/reducingbdloss_eastafrica.html.
49. Douglas F. Barnes, Keith Openshaw, Kirk R. Smith, and Robert van der Plas, *What Makes People Cook with Improved Biomass Stoves? A Comparative International Review of Stove Programs*, World Bank Technical Papers: Energy Series (Washington, D.C.: The World Bank, May 31, 1994), <http://go.worldbank.org/IX10ACZCP0>.
50. Ibid.
51. Jeff Mason, "Clinton Unveils U.S. Funds for Clean Cookstove Push," Reuters (New York, September 21, 2010), <http://www.reuters.com/article/2010/09/21/us-clinton-un-stoves-idUSTRE68K1QY20100921>.
52. Arunabha Ghosh and Ngaire Woods, "Governing Climate Change: Lessons from Other Governance Regimes."
53. Hillary Rodham Clinton. "Remarks at the Climate and Clean Air Coalition To Reduce Short-Lived Climate Pollutants Initiative". Remarks presented at the Climate and Clean Air Coalition To Reduce Short-Lived Climate Pollutants Initiative, Benjamin Franklin Room, Washington, D.C., February 16, 2012. <http://www.state.gov/secretary/rm/2012/02/184061.htm>.
54. Daniel Bodansky and Elliot Diringer, *The Evolution of Multilateral Regimes: Implications for Climate Change*.
55. "WTO | Understanding the WTO - Plurilaterals: Of Minority Interest," *World Trade Organization*, n.d., http://www.wto.org/english/thewto_e/whatis_e/tif_e/agrm10_e.htm.
56. Daniel Bodansky and Elliot Diringer, *The Evolution of Multilateral Regimes: Implications for Climate Change*.
57. Andrew Cornford, "Variable Geometry for the WTO: Concept and Precedents," Discussion paper (United Nations Conference on Trade and Development, May 2004), http://www.unctad.org/en/docs/osgdp20045_en.pdf.
58. Robert O. Keohane and David G. Victor, *The Regime Complex for Climate Change*.



59. Marc Bacchetta, Cosimo Beverelli, John Hancock, Alexander Keck, Gaurav Nayyar, Coleman Nee, Roberta Piermartini, Nadia Rocha, Martin Roy, Michele Ruta, Robert Teh, Alan Yanovich, *World Trade Report 2011: The WTO and Preferential Trade Agreements: From Co-existence to Coherence* (World Trade Organization, 2011), http://www.wto.org/english/res_e/booksp_e/anrep_e/world_trade_report11_e.pdf.
60. "The Asia-Pacific Partnership on Clean Development and Climate Fact Sheet" (APP Administrative Support Group, January 2010), http://www.asiapacificpartnership.org/pdf/translated_versions/Fact_Sheet_English.pdf; "About | Major Economies Forum," *Major Economies Forum*, 2009, <http://www.majoreconomiesforum.org/about.html>; "What Is the G-20," G-20, 2011, http://www.g20.org/about_what_is_g20.aspx; "G-20 Seoul Summit to Be Held on November 11-12, 2010" (Presidential Committee for the G-20 Summit, February 5, 2010), http://www.g20.org/Documents/201002_DateforG-20SeoulSummit.pdf; Katherine Michonski and Michael A. Levi, *Harnessing International Institutions to Address Climate Change*.
61. "Leaders' Statement: The Pittsburgh Summit" (G-20, September 24, 2009), <http://www.g20.org/images/stories/docs/eng/pittsburgh.pdf>; "Communiqué" (G-20, Meeting of Finance Ministers and Central Bank Governors, United Kingdom, November 7, 2009), http://www.g20.org/Documents/2009_communique_standrews.pdf; Bryan Walsh, "G20 Leaders Agree, Broadly, on Climate Change," *Time Magazine*, September 26, 2009, Online edition, sec. Science, <http://www.time.com/time/health/article/0,8599,1926384,00.html>; "G8 L'Aquila Summit: Chair's Summary", July 10, 2009, http://www.g8italia2009.it/static/G8_Allegato/Chair_Summary_1.pdf.
62. Elliot Diringer, *Summary: Copenhagen Climate Summit* (Washington, DC: Pew Center on Global Climate Change, December 2009), <http://www.pewclimate.org/international/copenhagen-climate-summit-summary>.
63. La Embajada del Ecuador, "Letter to the Secretary of the UNFCCC from the Embassy of Ecuador," Communication received from Parties in relation to the listing in the chapeau of the Copenhagen Accord, January 31, 2010, http://unfccc.int/files/meetings/cop_15/copenhagen_accord/application/pdf/ecuadorcphaccord_.pdf; H.E. Mr. Cristóbal González-Aller Juado and Mr. Karl Falkenberg, "Expression of Willingness to Be Associated with the Copenhagen Accord and Submission of the Quantified Economy-wide Emissions Reduction Targets for 2020," Communication received from Parties in relation to the listing in the chapeau of the Copenhagen Accord, January 28, 2010, http://unfccc.int/files/meetings/cop_15/copenhagen_accord/application/pdf/europeanunioncphaccord_app1.pdf; Todd Stern, "Letter to Mr. Yvo De Boer, Executive Secretary of the UNFCCC, from Todd Stern, U.S. Special Envoy for Climate Change," Communication received from Parties in relation to the listing in the chapeau of the Copenhagen Accord, January 28, 2010, http://unfccc.int/files/meetings/cop_15/copenhagen_accord/application/pdf/unitedstatescphaccord_app.1.pdf; Yvo de Boer, "Clarification Relation to the Notification of 18 January 2010," UNFCCC Notification to Parties,

- January 25, 2010, http://unfccc.int/files/parties_and_observers/notifications/application/pdf/100125_noti_clarification.pdf; Ryan Patterson, “Who’s On Board With The Copenhagen Accord? — U.S. Climate Action Network,” *US Climate Action Network*, n.d., <http://www.usclimatenetwork.org/policy/copenhagen-accord-commitments>; Jacob Werksman, “‘Associating’ with the Copenhagen Accord: What Does It Mean?,” *World Resources Institute, Climate, Energy & Transport News*, March 25, 2010, <http://www.wri.org/stories/2010/03/associating-copenhagen-accord-what-does-it-mean>; Jacob Werksman, “‘Taking Note’ of the Copenhagen Accord: What It Means,” *World Resources Institute, Climate, Energy & Transport News*, December 20, 2009, <http://www.wri.org/stories/2009/12/taking-note-copenhagen-accord-what-it-means>.
64. Jacob Werksman, “Q&A: The Legal Character and Legitimacy of the Cancun Agreements,” *World Resources Institute, Climate, Energy & Transport News*, December 17, 2010, <http://www.wri.org/stories/2010/12/qa-legal-character-and-legitimacy-cancun-agreements>; Emily Beament, “Global Warming Deal Hopes Revived After Cancun Agreement,” *The Independent*, December 11, 2010, Online edition, sec. Environment: Climate Change, <http://www.independent.co.uk/environment/climate-change/global-warming-deal-hopes-revived-after-cancun-agreement-2157688.html>.
65. Jennifer Morgan and Edward Cameron, “Reflections on COP 17 in Durban,” *World Resources Institute, WRI Insights*, December 16, 2011, <http://insights.wri.org/news/2011/12/reflections-cop-17-durban>; Jacob Werksman, “Q & A: The Legal Aspects of the Durban Platform Text,” *World Resources Institute, WRI Insights*, December 14, 2011, <http://insights.wri.org/news/2011/12/qa-legal-aspects-durban-platform-text>.
66. Ruth Greenspan Bell, “What to Do About Climate Change,” *Foreign Affairs*, June 2006, <http://www.foreignaffairs.com/articles/61710/ruth-greenspan-bell/what-to-do-about-climate-change>.
67. Gavin A. Schmidt, “Going to Extremes,” *RealClimate, RealClimate*, February 17, 2011, <http://www.realclimate.org/index.php/archives/2011/02/going-to-extremes/>.
68. Peter A. Stott, D. A. Stone, and M. R. Allen. 2004. “Human Contribution to the European Heatwave of 2003.” *Nature* 432(7017): 610–614; Gavin A. Schmidt, “Going to Extremes”; Pardeep Pall, Tolu Aina, Daithi A. Stone, Peter A. Stott, Toru Nozawa, Arno G. J. Hilberts, Dag Lohmann, and Myles R. Allen. 2011. “Anthropogenic Greenhouse Gas Contribution to Flood Risk in England and Wales in Autumn 2000.” *Nature* 470(7334): 382–385.
69. Mark Schneider, *The Nuclear Forces and Doctrine of the Russian Federation* (Washington, D.C.: National Institute Press, 2006), pg. 16.



Chapter 2

WHAT CLIMATE CONTROL CAN LEARN FROM PAST EFFORTS TO LIMIT NUCLEAR DANGERS

Barry Blechman and Brian Finlay

Introduction

The international community, through the efforts of individuals and their governments, has striven to contain the dangers of nuclear weapons ever since their inception in the 1940s. These efforts have waxed and waned over the years, both in response to weapon developments and as a result of changes in key political relationships. Over this period, a huge body of experience has accumulated with respect to state practices and multinational organizations and procedures. There is much that can be learned from this experience as the international community turns its attention to the equally profound danger of climate change.

Limits on nuclear dangers

Is the glass half-full or half-empty? Nuclear weapons have existed for 65 years but have only been used twice, both times during the first month of their existence. After all this time, it is clear that there is a definite prejudice, or international norm, against their use, although such a behavioral restriction obviously could be violated instantly at any point in the future.

The proliferation of nuclear weapons over the last six decades has been far less widespread than the nightmarish predictions of the Cold War. In the early 1960s, President John F. Kennedy worried there would be 15 to 20 nuclear weapon states before the end of the century.¹ In fact, only nine nations currently possess nuclear weapons with a tenth, Iran, also possibly seeking to join the so-called Nuclear Club. In fact at least a dozen countries who actually possessed nuclear weapons (Belarus, Kazakhstan, South Africa, Ukraine) or advanced programs to develop nuclear weapons (Argentina, Australia, Brazil, Iraq, Libya, South Korea, Sweden, and Taiwan) have since given them up.² It is therefore fair to say that efforts to restrain the spread of nuclear weapons to additional nations have been generally successful. Early efforts centered on the 1968 Nuclear Nonproliferation Treaty (NPT), the IAEA, and the control of exports of nuclear materials and equipment through multinational organizations, the latest incarnation being the Nuclear Suppliers Group (NSG), as well as national control measures. Over time, the international community instituted additional ad hoc arrangements to fill perceived gaps in this emerging technology denial regime. It also is widely believed that extended deterrence—U.S. commitments to defend some 30 nations from nuclear attacks—made an important contribution to restraining proliferation.³

Today, however, many worry that the nonproliferation regime is in danger of breaking down. Globalization has helped to push advanced dual-use technologies into more hands in more countries than ever before. The number of states that have tested nuclear weapons has increased from six to nine over the past 12 years, including North Korea, which exercised its right to withdraw from the NPT and then tested weapons twice.⁴ Also, many argue that constraints on trade in nuclear materials and equipment have been weakened by the U.S. 2008 initiative, approved by the NSG, to permit nuclear trade with India, one of the few countries that have not signed the NPT.⁵ Many believe that if Iran indeed achieves a nuclear weapons capability, there will be a cascade of proliferation across the Middle East.⁶



Efforts to limit the size of nuclear arsenals have also had positive results for some years, but now seem to be stalling. At the height of the Cold War, there were more than 60,000 nuclear weapons in the world, with all but a few hundred held in the arsenals of the United States and the Soviet Union.⁷ Today, there are around 20,000 weapons all told, with a portion of that total waiting in storage to be dismantled.⁸ Some reductions were made as a result of treaties negotiated by the United States and the Soviet Union; a far larger share of the reductions resulted from unilateral decisions of those two nations when their leaders came to believe that huge numbers of nuclear weapons were no longer militarily useful or politically necessary. The United States and Russia still have more than 90 percent of the world's weapons but are making modest additional cuts. Britain and France, each with a few hundred weapons, are also planning small cuts in their arsenals, but the other nuclear weapon states—China, India, Israel, North Korea, Pakistan—all seem to be increasing their weapon stockpiles and modernizing their weapons.⁹

Even at one-third their Cold War peaks, nuclear weapons continue to pose an existential threat to humanity. A limited nuclear exchange between two states would likely result in tens of millions of immediate deaths from the blasts and resulting fires and many more casualties as a result of radiation and longer-term environmental effects, leading to food shortages, genetic disorders, and higher rates of fatal diseases. Even a single weapon detonated in a world capital could instantly kill hundreds of thousands of people, with many more perishing over a longer period of time due to health complications from radiation. The use of thousands of weapons in an all-out nuclear exchange—as was and still is contemplated by the United States and Russia—could essentially destroy civilized life, if not life itself.¹⁰

Recognizing these dangers, popular worldwide movements have emerged periodically that seek to eliminate all nuclear weapons. This goal was embraced by President Obama in April 2009 and by the leaders of the 15 members of the U.N. Security Council,

five of which are nuclear weapon states, in September of that year. Articulating the goal has proven far easier than making tangible progress, however, and there is little to show for the ambitious nuclear risk control agenda the president set forth when he first took office.¹¹

In short, the decades-long efforts to limit the grave risks to humanity posed by nuclear weapons have a mixed record. There has been no nuclear war, and there are fewer states with nuclear capabilities than had been predicted. But tens of thousands of nuclear weapons continue to exist, and the dangers of their spread and use persist and may be accelerating as knowledge of how to build bombs and access to necessary technologies becomes more widespread.

There has been no shortage of efforts to end these dangers, ranging from unilateral national declarations, to formal and informal bilateral agreements, to multinational treaties, to the establishment of international organizations with substantial staffs and considerable powers. Some have succeeded; others have failed. But in all cases, there is much to learn from this rich experience that could be valuable to individuals seeking to limit and eventually reverse the comparable, albeit longer-term, dangers posed to humanity by man-made climate change.

We explore these potential lessons in this chapter, which is divided into three main sections: the Nature of Agreements, Verification, and Creating Incentives.

The section on the Nature of Agreements asks these questions: Have formal treaties been more effective than informal arrangements? Have multinational agreements been preferable to bilateral? Is global consensus essential to make progress, or can groups of states make progress on their own? Which is preferred: incremental steps that are easier to negotiate or more radical approaches that might be difficult to sell, but can alter the fundamental dimensions of the problem?

The section on Verification asks: How can states gain confidence that agreements, once they are established, are being observed by the signatories? Are there techniques and practices in the nuclear weapons world that might prove useful for verifying climate change agreements?

In the section on Creating Incentives, Paul Warnke, a former director of the U.S. Arms Control and Disarmament Agency, once observed that “arms control is an unnatural act,” meaning that it was highly unusual for states to accept limits on their sovereign right to arm and defend themselves.¹² What incentives were created for governments to take these unnatural steps? As knowledge and the means of producing WMDs have migrated to private-sector actors operating in the dual-use realm, how have these actors been incentivized to ensure that they cooperate with efforts to constrain the proliferation of their technologies, even though such actions may run contrary to their profit motives? What capacities and processes are helpful?

The Nature of Agreements

Agreements to limit nuclear dangers have taken many forms, and questions persist about the most useful ways to proceed.

Are formal multinational treaties beneficial even if they fail to gain universal adherence?

As noted, the centerpiece of efforts to constrain and eventually eliminate nuclear dangers is the NPT, which enshrines a “Grand Bargain” between the nuclear weapon states (NWS) that existed at the time it was negotiated and all other nations. The five NWS (China, France, Russia, the United Kingdom, and the United States) are given the right to possess nuclear weapons but, in a strongly hedged provision of the treaty, pledge to work to eliminate them over time. They also pledge to help other nations use nuclear energy for peaceful purposes. All the other signatory nations pledge not to acquire nuclear weapons. They are guaranteed the right to develop nuclear energy for peaceful purposes,



but vow to do so only under the supervision of an international agency (the IAEA) and in such a manner that the international community can be assured that the technology, materials, and equipment used in peaceful programs are not being diverted for use in weapon programs.¹³

The NPT was the result of growing proliferation fears in the early 1960s, capped by China's explosion of a nuclear device in 1964. This accomplishment, by what was considered a technologically backward nation in those days, gave credence to the predictions of widespread proliferation by the end of the century. As a result, the United States overcame resistance from key allies and even parts of its own government to work with the Soviet Union to put together the agreement relatively quickly. The treaty was concluded in 1968 with 98 original signatories and came into effect two years later, although it took 19 years for all signatories to ratify the agreement through their national legislatures. At the time of its conclusion, a significant number of nuclear weapon states (France and China) and nations that were considered potential proliferators (Argentina, Brazil, India, Israel, Pakistan) remained outside the agreement. Today, however, the NPT enjoys near universal adherence, with the notable exceptions of India, Israel, and Pakistan, which have never signed the treaty, and, as stated previously, North Korea, which had been a signatory and participant until 2003.¹⁴

The relative success of the NPT illustrates the benefits of moving ahead with an agreement even if key states may not be persuaded to join initially. The treaty enshrines the expectation that all but five states will not develop nuclear weapons, making actions which seem to move in that direction the focus of worldwide attention and sometimes subject to penalties. Prior to the treaty's negotiation, the expectation was that all technically advanced nations eventually would acquire nuclear weapons. The signatories empowered the IAEA to establish and monitor safeguards on peaceful nuclear facilities to ensure that they and the fissile materials that they use are not being diverted to weapon programs. If

the IAEA deems a country to be in noncompliance with its NPT obligations, the organization can bring this to the attention of the U.N. Security Council, which can then impose penalties on states that are skirting their obligations.¹⁵ Iran, for example, has been the subject of four U.N. Security Council resolutions over the past four years, each imposing stricter sets of sanctions on the country and its leaders.¹⁶

The NPT also demonstrates the benefits of building fixed reviews into an agreement. Initially, the NPT was to be reviewed every five years and to expire in 25 years unless renewed.¹⁷ The periodic reviews and expiration as the default condition made it easier to persuade states to join the regime.

The NPT also established the expectation that the NWS would act eventually to eliminate all their nuclear weapons. The periodic reviews provide an opportunity to focus attention on this pledge and sometimes cause the NWS to strive harder to at least make incremental progress toward the goal. In fact, the NPT was renewed permanently in 1995, a change that came about only after the five NWS reaffirmed in more specific terms their commitment to disarm eventually.¹⁸ The five-year reviews continue and have become quite contentious over time. The nonnuclear weapon states are becoming impatient with the NWS' slow progress toward their pledge to eliminate all nuclear weapons. Still, the reviews periodically focus the attention of the world's governments on the problem and provide useful diplomatic levers to pressure for greater progress toward disarmament and reaffirm the commitment to nonproliferation, as well as the right to peaceful use of nuclear energy.

Another formal, multinational agreement of interest is the Comprehensive Test Ban Treaty, which prohibits all nuclear tests with an explosive yield. This agreement was discussed for decades before being negotiated successfully in the 1990s.¹⁹ The CTBT is a central element in the nonproliferation regime, as it symbolizes a commitment to restrain the development of new types of



nuclear devices—so-called “vertical proliferation”—and eventually to phase out all weapons. Although 182 states have signed the CTBT, and 153 have ratified it, the treaty has yet to become a legal constraint as a provision requires its ratification by 44 named states before entry-into-force. The United States is the most prominent of the nine named states that have not yet ratified the treaty, followed closely by China.²⁰ Still, the CTBT has clearly been beneficial to global security. For instance, when it became clear that the treaty would not soon be implemented legally, most of the nuclear weapon states declared unilateral moratoria on nuclear tests. These declarations have been adhered to for 14 years. Only India, North Korea, and Pakistan have tested a nuclear weapon since 1996. The sharp decline in the number of nuclear tests and their total absence by the more established nuclear powers, seems to have taken some of the cachet out of nuclear weapon establishments in various nations and pushed these weapons even farther into the background of the thinking of political and military leaders about useful instruments for national security.

In addition, the international community has found a way to skirt the ratification requirement and establish the organization intended to monitor compliance with the CTBT. That organization, the CTBTO, in turn, has established a worldwide system of sensors that can detect nuclear tests virtually anywhere on the globe. This supplement to national intelligence systems has built confidence that a test ban is verifiable and diminished arguments against treaty ratification. Like the NPT, the continuing refusal of some nations to join the CTBT is weakening its hoped-for effects, but on the whole it has been a positive step—again demonstrating the benefits of moving forward even in the absence of universality.

Another related treaty in this category is the Chemical Weapons Convention, which bans the manufacture, sale, storage, and use of lethal chemical agents. The CWC, which entered into force in 1997, also has an implementing organization that oversees the destruction of existing chemical agents and ensures that commercial chemical plants are manufacturing lethal chemicals solely

for peaceful purposes.²¹ Again, there are some outliers, but the existence of the CWC and its implementation by most nations has helped relegate these WMDs to the fringes of the international community, making their use in warfare less likely than it had been prior to completion of the treaty.

In short, if key countries can be persuaded to join a regime—even if it is not yet universal and particularly if that regime has detailed verification provisions, an effective implementing organization, and stakeholder buy-in—the negotiation of a formal multinational treaty can establish international norms that, over time, can gain strength and become the only acceptable form of behavior. By isolating and focusing international attention on countries that seek to deviate from the norm, the agreements serve important purposes, even if they do not gain universal adherence for a considerable period of time.

Can unilateral actions supplement, or even substitute for, formal negotiated agreements?

Although formal multilateral treaties have been seen as the gold standard for arms control and nonproliferation—establishing predictability, transparency, and mutuality, and increasing global confidence in the regime itself by decreasing the likelihood of break-out—it is also true that formal approaches to complex threats can be laborious and politically difficult and can take a very long time to complete.

By far, the most complicated and time-consuming nuclear negotiations have been those seeking a comprehensive ban on the testing of nuclear weapons. Between the first nuclear test in the New Mexico desert in July 1945 and the end of December 1953, more than 50 atmospheric nuclear tests were conducted by Great Britain, the Soviet Union, and the United States.²² Rising concern over the spread of radioactive fallout led Prime Minister Nehru of India to call for a global ban on all nuclear test explosions in 1954. Despite a growing tide of international support, Cold War suspicions and skepticism over the ability to verify compliance



with a global ban prevented progress. Although the Limited Test Ban Treaty (LTBT) was negotiated in 1963, banning nuclear tests in the atmosphere, underwater, and in space, Nehru's vision of a comprehensive prohibition remained elusive.²³ All told, throughout the nuclear era, more than 2,000 tests were conducted by the nine states with nuclear arsenals.²⁴

In 1991, however, during an official conference on the LTBT, a motion to convert that treaty into an instrument banning all nuclear weapon tests led to negotiations for a comprehensive ban. The agreement was concluded five years later in September 1996; but, as noted previously, it has yet to enter into force.²⁵ Nonetheless, all signatories to the treaty have pledged to refrain from nuclear testing, a commitment which has been upheld for 14 years.

Efforts to negotiate reductions in U.S. and Soviet/Russian nuclear arsenals have continued for a lesser amount of time, but have been no less complicated and difficult politically. The first arms control agreements between the United States and Russia, the Treaty Limiting Anti-ballistic Missiles and the SALT agreement, took two years of preliminary discussions and three years of formal negotiations, entering into force in October 1972. Over that five-year period, the combined arsenals of these states grew from approximately 37,000 to nearly 42,000 warheads.²⁶ The SALT agreement was the first to place limits and constraints on the nuclear arsenals of any country and was a critical breakthrough in nuclear relations at the height of the Cold War. Not only did the agreement reduce the number of strategic weapons mutually directed at each state, it also opened a new era of transparency and confidence building that would be reinforced by additional treaty arrangements continuing to the present day.²⁷

After a downturn in U.S.-Soviet relations following the latter's invasion of Afghanistan and the subsequent refusal of the United States to ratify the follow-on SALT II Treaty, in 1982, the United States and the Soviet Union agreed to resume strategic nuclear arms reduction talks. It took almost 10 years of protracted negoti-



ations, however, before the first Strategic Arms Reduction Treaty (START I) could be completed in July 1991.²⁸ Like the SALT negotiating years, the initial negotiating period was marked by a dramatic rise in spending in both countries on nuclear weapons; and, in 1986, the combined Soviet and U.S. nuclear arsenals reached their peak at around 64,000.²⁹ The 1991 treaty set ceilings on both long-range missiles and bombers and on the number of “accountable” warheads, causing substantial reductions in both sides’ forces.³⁰ It should be noted, however, that the negotiating breakthrough on START occurred only following the revolutionary events that ended the Cold War and soon led to the breakup of the Soviet Union. A follow-on to the START treaty, which expired in December 2009, took only 18 months to negotiate during the Obama administration (and another six months to ratify) but made only symbolic reductions to the already greatly reduced U.S. and Russian arsenals—the result of unilateral actions, as discussed below.³¹

As the Soviet Union crumbled in the early 1990s, the U.S. and Russia pursued alternative means to circumvent the political challenges and time-consuming nature of the treaty process. As the Cold War drew to a close and the START process intensified, it became clear that there was a growing threat from so-called tactical or short-range weapons. These more portable and widely dispersed weapons were seen to be more susceptible to theft and diversion by rogue states and terrorist groups. Moreover, an overall inventory of these weapons eluded the new Russian government, and the conditions governing their security became highly questionable as the Soviet Union collapsed. Former Soviet stockpiles of fissile materials presented even greater dangers of theft and diversion. With its conventionally armed forces also in disarray, however, the Russian defense establishment resisted surrendering additional strategic forces, which it viewed as an increasingly important element if Russia were going to remain recognized as a great power. Aware of the political challenges of advancing the formal arms reduction process, as well as the desperate situation on the ground across the former Soviet Union, the civilian leaders of the



two states therefore embarked on a reciprocal reduction process that lacked both legal national commitments and formal verification mechanisms. On September 27, 1991, President George H.W. Bush unilaterally pledged to end foreign deployments of entire categories of U.S. tactical nuclear weapons, expecting that leaders in Moscow would follow suit. The Russian president indeed responded by moving to consolidate all tactical nuclear weapons on Russian soil and made additional pledges concerning the disposition of sea-based tactical nuclear weapons.³²

Far greater reductions in U.S. and Russian arsenals resulted from these and other unilateral actions than from the negotiated arms treaties. Despite this success, it is clear that these end runs around formal processes have limitations. Clearly, they are only possible when basic political circumstances change. If the Cold War had continued into the 1990s and 2000s, it is unlikely that, in the absence of mutual legal obligations and careful verification and monitoring of each other's actions, either the United States or Russia would be making cuts in their nuclear stockpiles of the magnitude that each has made. Moreover, the lack of formal legal documents means that states asserting that they will take unilateral actions cannot be held to account. Despite President Yeltsin's pledge, Russian military leaders state openly today that they continue to maintain short-range nuclear weapons on submarines and warships.³³ This failure to fulfill such commitments can have lingering political effects. During the debate on ratification of the NEW START agreement in 2010, Russia's failure to fulfill its commitment on shorter range tactical weapons was cited frequently as reason that the country could not be trusted and that the United States, therefore, should not ratify the NEW START agreement.³⁴

There is also a middle ground between detailed treaties and unilateral actions. In July 2001, for example, President George W. Bush and former Russian President Vladimir Putin signed a statement agreeing to begin talks on strategic issues. Once bilateral negotiations began, a new strategic arms reduction arrangement capped the number of operationally deployed, strategic warheads at 1,700

to 2,250 and took just six months to complete. At just three pages, this so-called Strategic Offensive Reductions Treaty lacked the verification protocols of its predecessors, yet would be ratified by both states' national parliaments within one year. The agreement relied upon the transparency and verification measures embedded within the earlier START treaty, however.³⁵

While many have suggested that President Bush's decision to forgo a more rigorous negotiation leading to a more comprehensive and formal agreement was a function of his administration's deliberate rejection of treaty-based solutions, it is clear that an individual administration's predilections toward formal treaties are but one factor motivating their pursuit, negotiation, and entry-into-force. For instance, despite control by Democrats in the Senate, the just-expired 112th Congress has ratified only one treaty, a tax agreement with France. By contrast, over the course of the Bush administration, 163 treaties were ratified, including 20 treaties in the first year of the administration, and a record setting 90 treaties in the last two years of the administration. These included agreements related to arms control and nonproliferation.³⁶ As such, factors beyond the relative attitudes of an administration seem to have played a major role in the treaty-making process.

Formal agreements provide important stability, predictability, and longevity to the nuclear risk reduction regime. Even in the absence of entry into force of the CTBT, the robust and effective verification regime called for in the treaty has been developed with a comprehensive monitoring system relying upon more than 337 facilities located around the globe.³⁷ Over time, this system has proved its effectiveness and provided mutual assurances of compliance to all governments around the globe. Similarly, in the case of the START agreements, robust verification and mutual inspection measures gave the United States and Russia assurance of compliance with the provisions of the treaty that help reinforce existing agreements and build confidence for follow-on measures. In short, formal agreements are preferred.

The price can be high, however, and in some ways counter-productive to the overall goal. In order to gain enough votes to ratify the NEW START agreement, for example, the Obama administration has committed itself to a massive overhaul of the U.S. nuclear infrastructure, to maintaining three separate kinds of long-range strategic forces, and to continued development and deployment of missile defenses. The administration also decided against a variety of unilateral actions that had been urged upon it, including withdrawal of the few U.S. short-range nuclear weapons remaining in Europe, the de-alerting of strategic missiles, and the adoption of a no-first-use of nuclear weapons doctrine.³⁸ As both Presidents Bush and Obama have proved, when circumstances permit, it may well be desirable to foreshorten lengthy negotiating processes and avoid incurring political obligations by making progress through informal pledges and commitments.

Can small coalitions of willing nations contribute to broader goals?

In August 1991, Soviet hardliners, dissatisfied with the reforms of the Gorbachev government, launched a coup while the president vacationed on the Black Sea. For three days, the world contemplated the implications of a breakdown in the custody and control of the world's largest arsenal of atomic weapons. While ultimately unsuccessful in overthrowing the government, the coup attempt awakened the international community to the growing fissures within the Soviet empire and the potentially catastrophic consequences of a failure of command and control.

When the Soviet Union was formally dissolved in 1991, Russia and its former Soviet brother countries, known collectively as the Former Soviet Union (FSU), were left to deal with the legacy of massive nuclear, biological, and chemical weapon programs with vastly diminished resources. Moreover, Moscow's ability to exercise adequate command and control and prevent unauthorized access into this WMD complex was frequently challenged. Security measures that worked well in the Soviet police state became inadequate in the free-wheeling days following the breakup. Knowledge, materials, and weapons themselves became instantly

marketable products to terrorists, rogue states, and criminals just seeking to make a quick fortune. As economic conditions worsened in the early 1990s, stories of the personal hardships experienced by thousands of under- or unemployed WMD workers began surfacing. Desperate insiders and committed thieves and terrorists now had both the motivation and the wherewithal to buy, steal, or otherwise divert the necessary components for nuclear, biological, and chemical weapons—or even the weapons themselves. From 1991 to 1997, the Russian gross domestic product (GDP) fell by almost 40 percent. In 1997, Russia's GDP grew by 0.8 percent, but this apparent turnaround was quickly obliterated by the 1998 crisis in which the ruble crashed.³⁹ The temptation to divert materials from within the weapon complexes for profit led to renewed fears of an incipient nuclear, biological, and chemical black market. Potential proliferators recognized that only a small amount of fissile material—an amount small enough to fit into a can of soda—was required to build a viable nuclear device. This dire situation gave way to an innovative new approach to arms control and nonproliferation.

Concluding that the traditional tools of arms control and the many other counter-proliferation efforts operated by the U.S. Government remained necessary but ultimately insufficient instruments to stem the potential outflow of weapons, materials, technology, and expertise from the FSU, Senators Sam Nunn (D-GA) and Richard Lugar (R-IN), encouraged by the NGO community, founded the Cooperative Threat Reduction Program. Its mission would gradually evolve from an emergency effort led by the Department of Defense to secure and destroy excess Soviet nuclear weapons into a broader, multi-department, multi-country attempt to keep weapons of mass destruction, the materials to build them, and the talent behind them out of the hands of hostile states and terrorist organizations. For the first time ever, an array of bilateral, cooperative programs were designed to help denuclearize one-time nuclear adversaries across the crumbling Soviet Empire. Additional initiatives, operated entirely under bilateral agreements between participating states, primarily in Europe, were developed



over almost two decades on an ad hoc basis as evolving threats of proliferation and environmental catastrophes warranted.⁴⁰ In 2002 at a meeting of the G-8 leaders, governments pledged US\$20 billion to a multilateral initiative directed at building down the FSU's WMD infrastructure.

The success of these CTR programs inspired a host of additional ad hoc flexible, voluntary measures designed to prevent proliferation amid a dramatically shifting international security environment. The Proliferation Security Initiative, for instance, is an international effort aimed at interdicting the transfer or transport of WMDs, their delivery systems, and related materials to and from states and non-state actors of proliferation concern. The PSI was first announced by the United States in 2003 and, like the CTR program, consisted entirely of like-minded states who found an immediate common interest in preventing the proliferation of WMDs. The program involves joint exercises and activities to interdict vessels suspected of carrying WMDs or their components on the high seas.⁴¹ To accomplish this, many states have adjusted their legal frameworks to permit the navies of other PSI member-countries to board ships bearing their flags on the high seas. Joint exercises have led to greater commonality in means of communications among navies and to commonly accepted procedures for a variety of actions.

Originally envisioned as part of the 2002 U.S. National Strategy to Combat WMD Proliferation, the PSI received its final push toward adoption when the United States was unable to find a legal basis to interdict a shipment of North Korean SCUD missiles bound for Yemen. With 11 partner governments initially, the PSI today boasts more than 90 partners committed to a common "statement of interdiction principles." These principles include a commitment by the partners to interdict transfers to and from states and non-state actors of proliferation concern to the extent of their capabilities and legal authorities, to develop procedures to facilitate exchanges of information with other countries, to strengthen national legal authorities to facilitate interdiction, and to take specific actions in support of interdiction efforts.⁴²

Although judging the efficacy of this effort is far more challenging than evaluating progress in the CTR program, U.S. government officials have stated that its provisions have permitted numerous interdictions that otherwise would have been outside of international legal authorities.⁴³ Most famously, the PSI is credited with the interdiction of a nuclear shipment bound for Libya, which eventually led to that nation's decision to abandon its previously secret nuclear weapons program. As such, the PSI has been an effective non-treaty-based approach to build an effective coalition against the proliferation of WMDs. Moreover, these arrangements have been set in place without the laborious negotiating process necessary for multilateral treaty-making and are working without the creation of a new multinational organization to implement them.

Is there value in articulating ultimate goals, even though they may not be achievable for many years, if ever?

There was an interesting debate in the arms control community in the years leading up to the 2008 election. During this period, George Schultz, William Perry, Henry Kissinger, and Sam Nunn published articles, organized conferences, and made speeches advocating the total elimination of nuclear weapons.⁴⁴ They argued that, unless these weapons were eliminated completely, they would inevitably spread to additional nations and, eventually, fall into the hands of terrorist organizations. Schultz and the others stated that serious commitment to the goal of elimination by all the nuclear weapon states was a prerequisite for efforts to persuade others not to acquire these weapons of mass destruction.

With support coming from these four experienced foreign policy statesmen, the long-standing but small popular movement for nuclear abolition suddenly gained momentum. During the 2008 presidential campaign, both major party candidates, Senators Obama and McCain, articulated support for the goal. As noted, after he was elected, President Obama announced that the United States would pursue the goal and persuaded many other world leaders to express support for "nuclear zero." President Obama and many private citizens argued that, even if the goal could not

be achieved for many years, perhaps not even in his lifetime, articulating the end-point was essential to building a political constituency for the incremental measures that were necessary steps on the path to disarmament.⁴⁵

Many experienced government officials and outside experts disputed this approach—not because they were opposed to the goal necessarily, although some were, but because they thought that elimination was too far-reaching and unrealistic an objective and that it would divert attention and government resources from more practical objectives, such as further incremental reductions in U.S. and Russian arsenals. These officials argued, moreover, that because many would see the goal as naïve, it would result in the loss of political support for more doable measures, rather than build the constituency for incremental steps, as supporters of the “Global Zero” movement believed.⁴⁶

In the end, the Obama administration tried both approaches. The president articulated the disarmament goal, but few of his subordinates seemed to share it. There were no studies within the government, for example, about the best approach to total nuclear disarmament. Moreover, in the actual policies it pursued and specific actions it took, the administration continued to pursue the incremental measures that had been on the agenda for the past three decades. In addition, to ensure support for those incremental measures, the president also pledged to maintain the effectiveness of the U.S. nuclear arsenal so long as such weapons continued to exist. He also articulated a nuclear doctrine and requested spending for nuclear modernization programs that seemed to give lie to the sincerity of the disarmament goal. Consequently, for those intent on complete disarmament, the benefits of the president’s approach are open to question.

This, of course, is a matter of judgment, and the jury is still out; but many conclude that the commitment to the goal of complete nuclear disarmament is beneficial. Internationally, it placed U.S. diplomatic efforts to contain proliferation and secure nuclear

materials from terrorists on the high ground, thereby making it easier, for example, to gain support for punitive measures intended to constrain and eventually end Iran's nuclear program. It would have been more difficult to persuade third nations to support U.N. resolutions putting sanctions on Iran if the United States had not recommitted itself to the ultimate goal of complete nuclear disarmament. Many believe that by articulating the zero goal in a more emphatic and public way than had been done previously, the United States gained a much stronger position diplomatically on Iran and a number of other related issues. Similarly, rhetorical support for the elimination of nuclear weapons has helped to maintain a domestic constituency in support of the incremental steps that have been achieved. The U.S. arms control community was willing to mount a major and coordinated effort to ensure ratification of the NEW START agreement with Russia, for example, even though it meant accepting nuclear modernization plans, because of its understanding that the agreement was a step toward deeper reductions and the eventual elimination of nuclear weapons. Thirty years ago, when a similar agreement (SALT II) was being debated in the Senate, there was very little support for it outside the government, because it was seen as a small step that accomplished very little on its own and was not part of a broader effort that could lead eventually to disarmament. SALT II was never ratified; NEW START was ratified at the end of 2010.⁴⁷

In short, even if only modest steps are feasible in the near or even midterm, to mobilize supportive political constituencies, at home and abroad, to make even those small steps possible, it is important to place incremental measures in a context in which they can be seen as moving and building momentum toward more far-reaching goals.

Verification

Verifying compliance with agreements or even with unilateral declarations of intent has been a difficult, but extremely important aspect of the progress that has been made toward limiting nuclear

dangers. The absence of verification measures can and has been taken advantage of by nations to escape their commitments. This not only vitiates the benefits of whatever agreement is directly involved, but has a corrosive effect on the ability to muster political support for additional measures, even if they are only vaguely related to the agreement under which cheating has occurred. A Biological Weapons Convention (BWC) was negotiated and ratified in 1972, for example, which banned biological weapons and toxins. Unlike the CWC, however, the BWC has no verification provisions and no implementing organization.⁴⁸ We know now that the BWC was violated massively by the Soviet Union until the 1990s, and the U.S. government is concerned that other countries are similarly ignoring its provisions.⁴⁹ This has created a definite cynicism about the treaty that has leaked into debates about nuclear arms control agreements. During the debate on NEW START, for example, critics often pointed to Soviet cheating under the BWC as reason not to ratify the nuclear agreement.⁵⁰

Verification is essential in democracies for the public to gain confidence in the process of international agreements, thereby building momentum for more ambitious measures. When proposing total nuclear disarmament in the United States, for example, the immediate response of many skeptics is, “It’s impossible because they (Russia, China, Iran, whomever) will cheat.” The attitude is understandable, given some nations’ checkered history of compliance with agreements with no or inadequate means of verification.

The United States depends primarily on its own intelligence agencies for verifying compliance with nuclear agreements, but the various agreements that have been concluded have incorporated a variety of means to ensure compliance. Over time, these measures have become increasingly intrusive, which raises difficult political issues of trade-offs between the need to deal with global threats and the desire to protect national sovereignty. It also raises the issue of protecting proprietary information. This was the case in negotiation of the CWC, which calls for inspections of plants that manufacture lethal chemicals to ensure that they

are not manufacturing chemical weapons. Involving representatives of the chemical industry in the negotiations was essential to make possible completion of the Convention and its ratification, because those representatives were able to assure that the inspections would be circumscribed sufficiently to avoid compromising proprietary information. Similar concerns have been one factor preventing the negotiation of a Verification Annex to the BWC as the pharmaceutical industry is very concerned about the possible compromise of proprietary information by on-site inspections.⁵¹

Multinational verification measures can generally be classified into three categories: (i) on-site inspections and monitoring of facilities by both individuals and automated sensors, (ii) the creation and use of international organizations with the specific mission of ensuring compliance, and (iii) dependence on information provided by private individuals and corporations and by NGOs. We discuss each of these categories in this section.

On-site inspections and monitoring

In the history of nuclear arms control, on-site inspections and monitoring of facilities have provided the greatest amount of confidence to signatories to an agreement. International practice in this area has advanced substantially with a degree of intrusiveness accepted today that would have been unthinkable at the onset of the nuclear age.

As noted, compliance with the NPT is monitored by the IAEA. It provides assurances that nuclear facilities declared to be used for peaceful purposes are not diverted for weapon purposes. Signatories to the NPT are required to complete a Comprehensive Safeguards Agreement with the IAEA that specifies the terms of its surveillance. To ensure compliance, the IAEA accounts for the amount of nuclear materials that are delivered to a reactor and then are reprocessed following use, safeguards the materials during the operation of the reactor through the use of video surveillance and tamper-proof seals, and conducts on-site inspections periodically.



In a relatively new development, 103 countries have completed a so-called “Additional Protocol” to their Safeguard Agreements with the IAEA, which permits the agency to conduct inspections of undeclared facilities on a challenge basis.⁵² These agreements will permit the IAEA to determine if a suspicious looking facility that had not been declared to have a nuclear purpose, like the undeclared reactor that Syria was building in a remote area of southeastern Syria in 2007, is in fact subject to the terms of the NPT and should be monitored. Challenge inspections on short notice by international monitoring agencies are a relatively new development in the world of arms control, but are now included in the CWC and the CTBT, as well as in all the Additional Protocols that have been completed.

In their initial nuclear arms control agreements, the United States and the Soviet Union depended strictly on so-called “national technical means” (i.e., intelligence systems) to monitor compliance. Beginning with the 1987 agreement that banned intermediate-range nuclear forces (INF), however, agreements between the two countries began to make provisions for on-site monitoring. The INF treaty, in fact, permitted each nation to station permanent observers at each other’s relevant manufacturing facilities, along with certain technical equipment.⁵³ The START agreement, completed later during the Reagan administration, had extensive on-site inspection provisions.⁵⁴ And the NEW START agreement will carry on-site inspections to new levels of detail, permitting each side’s inspectors to peer into missile silos and submarines and actually count the number of nuclear warheads on individual missiles.⁵⁵

International monitoring organizations

As noted, the NPT, CWC, and CTBT all have established international organizations charged with ensuring compliance with the terms of the agreement. Typically, such organizations are organized in three parts, although the names of the sub-organizations may vary. All state parties to the agreement belong to a general assembly, which meets annually to review implementation of the accord and to appoint the executive council. This organization

also might be charged with discussing any amendments to the agreement should such a need arise. Second, there typically is an executive council of some sort in which the representatives of a smaller number of states meet more frequently and oversee the work of the Secretariat. The latter is charged with the actual conduct of the work of the organization, preparing reports on compliance, investigating possible violations, and implementing means of verification, including the conduct of inspections.

Although these organizations' assemblies, and to a lesser extent their executive councils, can raise questions about and even issue negative reports on a signatory's compliance, enforcement of agreements has always been left to the U.N. Security Council. Because the Security Council is the only international body authorized by its charter to call for the use of collective military force against individual nations, countries have been reluctant to assign enforcement rights to other organizations. This is a problem as the structure of the Security Council, set more than 65 years ago, no longer represents accurately the distribution of power in the international community. Many nations question the legitimacy of the Security Council's decisions because emerging powers like Brazil, India, and South Africa are not permanent members with veto power. Reforming the structure of the U.N. Security Council would make enforcement of international agreements—whether to limit nuclear arms or to limit carbon emissions—a great deal more palatable to many governments.⁵⁶

Another issue is the relationship between international monitoring agencies and national means of intelligence. This is obviously a delicate matter. States that might provide information to help these organizations are sometimes reluctant to do so for fear of compromising their national intelligence sources or methods. At the same time, the organizations themselves may be reluctant to become too closely involved with a particular nation's intelligence agency for fear of either being misled or being perceived as biased. Both sides of the problem were experienced by the organizations that monitored Iraq's compliance with its agreement, follow-



ing the 1991 Gulf War, to dismantle its WMDs and the means of manufacturing them. Although these agencies at times benefited from information provided to them by national agencies, there were reports that information was sometimes leaked to the Iraqi government, helping it to disguise the element under investigation prior to an inspection. At the same time, the Saddam Hussein regime came to see the agencies as instruments of hostile powers and an arm of Western intelligence agencies. In considering how to verify more consensual agreements through multinational agencies, one needs to consider the risk that close relationships between national intelligence agencies and the multinational agency could antagonize some signatories to an agreement and cause them to lose trust in the monitoring organization.

Finally, there is the issue of multinational monitoring agencies' willingness to exercise the authorities that have been issued to them. Some observers in Western nations have criticized the IAEA in recent years, for example, for not pressing Syria hard enough to permit the IAEA to conduct a prompt investigation of the under-construction-reactor destroyed by Israel in 2007 and then for not explaining the traces of uranium that were found at the site when the inspection was conducted many months later.⁵⁷ Similarly, the organization charged with implementing the CWC has never conducted a challenge inspection of a peaceful chemical plant, as it is permitted to do by the Convention. However, the leaders of these organizations perceive themselves to be in difficult situations. They serve and receive resources from the signatories to the agreement. There is concern that, if they press their briefs too hard or in too many cases, they risk alienating blocs of states that, in the end, will result in either withdrawals from the treaty or more blatant disregard of its provisions.

This is the case particularly when there are clear divisions among the signatories to the accord for which they are responsible. With respect to the IAEA, for example, the sharp divide between nations with nuclear weapons and those without, and the latter's increasing impatience with the former's failure to move rapidly toward



the elimination of nuclear weapons, has influenced the agency's ability to conduct its mission vigorously. The non-nuclear weapon states, particularly those like Brazil with advanced civilian nuclear technologies, increasingly are balking at accepting tighter IAEA controls on civilian fuel facilities. This is despite recent evidence of countries' ability to divert fissile material from such facilities into weapon programs. Part of the reason for the IAEA's reluctance to move more aggressively against questionable activities may be related to a fear of alienating this influential bloc of states.

Walking the fine line between timidity and exaggerated aggressiveness is a difficult task for leaders of all multinational organizations.

Making use of the private sector

Limitations on weapons of mass destruction involve companies and individuals in the private sector. While the know-how and technologies necessary to fabricate an atomic weapon were controlled tightly by a small number of nuclear-capable governments early in the atomic era, because of globalization, those capacities today have spread to more countries and more non-state private sector actors than ever before. Today's dual-use technology innovations and manufacturers are found almost entirely in private hands around the globe, making their control increasingly difficult. Because control measures over these technologies have proved to be porous, at times, it has become essential to create incentives to ensure cooperation in the effective implementation and verification of the agreement in question. It is also true that such cooperation is critical for the negotiation itself, as demonstrated by the cases of the CWC and the BWC, and might be particularly relevant when considering negotiated limitations on carbon emissions.

Banning chemical weapons, for example, requires an ability to inspect chemical plants to ensure that they are engaged in manufacturing, fertilizer, say, rather than lethal chemical weapons. Companies naturally are reluctant to permit intrusive inspections for fear that they will interfere with efficient operations and thus



diminish profits or even reveal industrial secrets. Recognizing the potential for opposition to the CWC from the chemical industry, NGOs in the United States actively sought out contacts in the industry who could advise the government on how to design inspections that would minimize these concerns. This information was fed into the negotiations. Moreover, having its concerns allayed in this manner, the chemical industry not only did not oppose ratification of the Convention, but some representatives worked actively in its favor.

The history of the Biological Weapons Convention tells the opposite story, yet reinforces the broader importance of stakeholder buy-in to the control regime. Whereas the chemical industry recognized the importance and potential downside to a negotiated regime without its input, and consequently was an active participant both in the convention's conclusion and now in its successful operation, large swaths of the biopharmaceutical community made the opposite calculation when it came to negotiation of a verification protocol to the BWC early in the George W. Bush administration. Indeed, many within the industry worked systematically to disrupt and ultimately help foil development of a robust verification regime after a protracted negotiation.⁵⁸

Efforts to limit nuclear proliferation have similarly had a less positive relationship with the nuclear industry, but more recently the trend seems to be moving in more positive directions. For many decades, efforts to abolish nuclear weapons were often linked with the abolition of nuclear power as well, which caused the industry to perceive nuclear arms control enthusiasts as opponents. The reborn "elimination" movement has been more careful to discriminate between weapons and peaceful uses of nuclear energy, working to safeguard nuclear plants so that they cannot be diverted covertly to weapons purposes, rather than to abolish them.

The cooperation of the nuclear industry is essential, moreover, in the effort to control the trade in nuclear materials and other specialized materials and equipment that can have both peaceful

and weapons purposes. Trade in this so-called dual-use equipment is regulated by the NSG, but enforcement of the regulations really depends on manufacturers being watchful about suspicious buyers or patterns of buying. A suspected proliferator would be unlikely to seek an item on the NSG list directly. Instead, it would seek to acquire it through front companies established in third countries. The officials of companies that manufacture these specialized items or materials are familiar with global patterns of trade in these items and therefore are in an excellent position to sense such attempts to end-run international regulations and alert government officials.

This brings us to the role of whistle-blowers. Although they are not a means on which nations can depend for the verification of agreements, individuals in governments or working on government projects who disagree with a decision to cheat on an agreement can sometimes focus attention on the project. The Iranian uranium enrichment plant at Natanz, for example, was being constructed and equipped in secret until revealed by an Iranian dissident group. That group's information presumably came from someone inside the project.⁵⁹ Obviously, it takes a great deal of courage for an individual to take such a step, but, given the stakes involved in climate change, it is not inconceivable that whistle-blowers would step forward if nations were fudging the information being reported on their emissions—even if the impetus for such actions were unrelated to the individual's environmental commitments.

Private individuals and NGOs, finally, can play a role in catalyzing action by governments on specific issues or agreements. During the final negotiations on the CTBT, for example, NGOs in world capitals worked closely with their respective governments and with one another to resolve logjams that had developed in the talks. The decision at the 1995 NPT Review Conference to extend the treaty indefinitely, rather than permit it to lapse as called for by its initial terms, was facilitated by a coalition of NGOs that worked diligently in New York to help bring the inter-government negotiations to a favorable outcome. The very start of U.S.-Soviet

arms control was nurtured initially in meetings of individuals from many nations, organized in the 1950s and 1960s by organizations like Pugwash.⁶⁰

In the field of arms control and nonproliferation, private actors have at times played an important catalytic role in developing innovative solutions to problems that have eluded formal resolution mechanisms. For instance, immediately following the dissolution of the Soviet Union, it became clear that the tens of thousands of WMD scientists working in the sprawling nuclear, biological, and chemical weapons complexes of the FSU posed an unprecedented threat to international security. The proliferation of their knowledge to states of concern or even to terrorist organizations would have represented an international security catastrophe of the highest order. In response, international financier George Soros began to make a series of strategic “investments” that sought to engage these scientists in peaceful pursuits in their home institutions. Over time, these activities were institutionalized in two new organizations dedicated to this mission—the International Science and Technology Center in Moscow and the Science and Technology Center Ukraine. Funding for these “scientist redirection” efforts soon shifted from private philanthropy to more enduring government (principally G-8) sources, as well as a series of bilateral programs sponsored by the United States.⁶¹

In the face of the purported “renaissance” in nuclear energy, there is concern throughout the nonproliferation community that a growing proportion of states will seek to develop complete domestic fuel cycles to ensure that their supply of nuclear fuel could not be disrupted by the political whims of foreign suppliers. Because the technologies to produce fuel are the same as those necessary to produce highly enriched uranium for weapons, the nuclear renaissance could lead to a proliferation of nuclear-capable states around the world. Innovative efforts have been suggested to reduce this enrichment-technology proliferation. To ease concerns about arbitrary supply restrictions, experts have long recommended that existing nuclear supplier states establish so-called international

fuel banks and develop ownership schemes that essentially would bring the fuel cycle under multinational controls. Multinational fuel banks would be confidence-building measures meant to back up the commercial nuclear fuel market. After years of discussion and little appreciable progress, American investor Warren Buffett pledged \$50 million to the IAEA toward the construction of a fuel bank housing 60 to 80 tons of nuclear fuel. The donation required the IAEA to find \$100 million in matching funds, which has now been successfully met as a result of support from Kuwait, the United States, the European Union, Norway, and the United Arab Emirates. This innovative private approach has therefore animated a practical program at the official governmental level.⁶²

Finally, in 2002, the U.S. Government learned that roughly 48 kilograms of highly enriched uranium (HEU), much of it usable in weapons, was sitting at an inadequately secured storage facility in Belgrade. Entering into negotiations to repatriate that material to Russia, the U.S. Department of State agreed to contribute approximately \$2 million to the project. Unfortunately, the State Department lacked legal authority to meet a key demand of the Yugoslav government, namely, that the remaining 2.4 tons of spent fuel in the reactor be managed in order to reduce attendant safety and environmental risks. The U.S. Government therefore turned to a private NGO funded by businessman Ted Turner to contribute \$5 million to the IAEA so that it could conduct this critical component of the operation. Following the successful return of the HEU to Russia, the U.S. Secretary of Energy declared the operation a “model of how governments, the international community, and the private sector can work together to reduce the threat posed by these materials.”⁶³

In short, NGOs and other private actors have a far greater ability to explore ideas and alternative ways to resolve national differences than governments can in official negotiations. If conducted by experienced and knowledgeable individuals, such Track II negotiations, as they are known, can serve useful roles in developing ideas and testing their acceptability from various national perspectives.

Verification and national sovereignty

The solution of potentially catastrophic global challenges like nuclear proliferation and climate change requires recognition that these dangers transcend national boundaries, and therefore, their resolution likely requires the voluntary relinquishment of some aspects of national sovereignty. This is a difficult concept for some to accept in many nations, particularly in the United States. Persuading nations to take such steps requires, first, recognition of the seriousness of the common danger facing people in all states and, second, agreements that treat all states equitably. To conclude such agreements, the greater power must recognize that countries may be in varying stages of development and have varying amounts of resources but that they each have sovereign rights that can only be relinquished voluntarily through national decisions. There has been sporadic, but continuing progress in nations' willingness to compromise sovereign principles in recognition of the dangers of nuclear weapons. When on-site inspections were first included in U.S.-Soviet arms control agreements, many American political leaders expressed concerns that the presence of Soviet officials at military or industrial facilities on U.S. soil would present opportunities for espionage and the compromise of U.S. technological secrets. In the debate on NEW START at the end of 2010, however, the balance of political perceptions had been reversed. An important argument in favor of ratifying the treaty was that it maintained inspectors in each country, thereby continuing the greater transparency into nuclear forces and lessening suspicions that accompanied such transparency. This argument appeared to have the greatest value with the more conservative senators who came to support the treaty.

It is essential that continuing education of publics all over the world create similar perceptions about the need and value of compromising national prerogatives in order to avoid the global catastrophe that could result from continuing climate change.

Creating Incentives, Overcoming Obstacles, and Building Capacity

As noted previously, initiating the “unnatural act” of arms control, and even limiting proliferation when it threatens commercial profits, has become an increasingly difficult conundrum for the security community. While motivating an array of actors with disparate interests to act responsibly is almost always a challenge in any context, we sketch below three general patterns that have emerged for overcoming these obstacles in limiting nuclear dangers.

Disasters as enablers

As noted previously, the end of the Cold War brought a tectonic shift in global security relations and, along with it, a new array of nuclear dangers based on Russian weakness and instability, rather than on Soviet strength. As the world’s largest nuclear armed empire collapsed and the central authorities in Moscow seemed in danger of losing control of their nuclear weapons and materials, the United States made the strategic decision to circumvent the formal treaty-making process by unilaterally withdrawing and destroying all ground-launched short-range weapons deployed overseas, followed by the withdrawal of tactical nuclear weapons on surface ships, attack submarines, and land-based naval aircraft during “normal circumstances.”⁶⁴ A week later on October 5, 1991, Soviet President Mikhail Gorbachev responded to the U.S. president’s unilateral initiative with reciprocal Soviet measures.⁶⁵ The result was a near immediate, significant reduction in deployed and potentially destabilizing tactical nuclear weapons. One year later, in response to a second round of U.S. unilateral withdrawals, Russian President Boris Yeltsin reaffirmed Gorbachev’s initiative and announced a second round of reciprocal reductions that would eliminate one-third of Russia’s sea-based tactical nuclear weapons, one-half of its ground-to-air nuclear missile warheads, and one-half of its airborne tactical nuclear weapons stockpile. In addition, pending reciprocal American action, it would place the remaining half of this stockpile into central storage depots.⁶⁶ The United States and Russia have not agreed to any additional

measures to reduce, eliminate, or even share information on their tactical nuclear stockpiles since the reciprocal unilateral steps in the 1990s, making those decisions especially remarkable. They clearly were possible only because of the extraordinary circumstances attending the break-up of the Soviet Union and the attendant dangers of a complete breakdown of proliferation controls.

Aligning goals with other national interests

In 1968, with the conclusion of the NPT, the signatories to the accord entered into the aforementioned grand bargain. Yet, the obligations of all nonnuclear weapon states that signed the accord neither to pursue nor to receive weapons or technologies directly or indirectly related to the manufacture of weapons, as well as the safeguards regime that monitors compliance with those obligations, have come increasingly under threat. In part, this stress is the result of the growing dispersion of what are now many-decades-old technologies and the increasing desire of many nations to reduce their reliance on overseas sources of energy both by relying more on nuclear energy and by developing complete nuclear fuel cycles of their own. In addition, however, some nonnuclear weapon states are becoming increasingly discontent with the grand bargain, believing that the nuclear weapon states are not taking seriously their corresponding obligation to disarm. These factors are putting growing strains on the viability of the NPT as the central bulwark against widespread proliferation. It has become clear that the incremental steps being taken toward smaller nuclear arsenals by the nuclear powers in pursuit of their disarmament obligations are losing their ability to satisfy governments that have long foresworn a nuclear weapons capability. New incentives to maintain support for the regime have become necessary.

In an era of growing energy insecurity, the inalienable right of sovereign states to pursue nuclear energy has become a central *quid pro quo* for governments who might otherwise be tempted to develop a nuclear weapons capability. Given the clear benefits of civilian nuclear technologies in a world of growing energy scarcities, states whose security perceptions might otherwise lead to a



national decision to build nuclear weapons, seem to be influenced by greater access to civilian technologies. For many countries, the inalienable right to pursue civilian nuclear power generation remains a central rationale for continuing participation in the denial regime.

Significantly, the NPT ensures that the benefits of civilian nuclear technology will not be denied to nonnuclear-weapon states that are party to the treaty—indeed, that technology must be shared on a nondiscriminatory basis and under appropriate international monitoring. This provision provides a unique opportunity to link NPT obligations and benefits with wider governmental efforts to pursue civilian nuclear power generation. Of course, many governments with near- or even long-term plans to pursue civilian nuclear power lack the financial, technical, and/or human capacities necessary to advance on a purely indigenous basis. But by leveraging the technical assistance necessary to design, build, and safely operate a civilian nuclear facility under the NPT, governments whose plans might otherwise be viewed as an improbable goal, and at worst as a proliferation threat, can not only expedite fulfillment of their quest for energy diversification, but also simultaneously reassure the international community of their peaceful intent. In short, obligations and benefits under the NPT can be leveraged in a mutually beneficial manner that fills capacity shortfalls while ensuring that international nonproliferation obligations are satisfied. By aligning these national goals, compliance with the NPT can serve as a net benefit to governments in good standing with the treaty.

Capitalizing on co-benefits of compliance

Throughout the Cold War, concerns over proliferation were restricted to wealthier governments of the North. But as innovation, research and development, production, and distribution have gone global, so too have the threats posed by weapons of mass destruction. Today, weak controls across the global South are making developing countries new hot spots for proliferation dangers. While the most technologically advanced nations are

challenged by the proliferation of relevant technologies and the blurred lines between peaceful and nefarious uses of those technologies, the response capacities of developing countries are even more severely limited. Even the most conscientious developing-country government, sensitized to the dangers of the proliferation of weapons, materials, and expertise of mass destruction, faces immense practical difficulties in preventing proliferation in a globalized economy. Convincing these governments to make greater investments in counter-proliferation activities while, for instance, their public education and health infrastructures suffer from neglect, is not an easy or even reasonable task. Indeed, the perceived unwillingness of these poor governments to fully embrace nonproliferation standards is also a conflict over technology itself. The tightening of controls demanded by the North is seen by many poor countries as a gambit to stymie competition and to keep the developing world in a perpetual state of underdevelopment. The global financial crisis only exacerbates the developing world's need for the most basic human services, even in the face of a rising tide of proliferation dangers.

As of late, nonproliferation assistance has offered innovative new approaches to closing the growing divide between the haves and have-nots and between the security-conscious North and the development-hungry South. By working to build a bridge between urgent domestic priorities in proliferation-prone recipient states, such assistance has provided these countries with a unique opportunity to tap into “dual-benefit” security-related assistance to meet many of their development and capacity-building objectives.⁶⁷ For instance, the technical assistance and communications infrastructure required to detect and interdict weapons of mass destruction is equally critical for emergency management authorities and first responders in the event of natural disasters. The ability to apprehend and prosecute criminals who may be marketing materials of mass destruction requires a well-trained police force and functioning judiciary. The prevention of human, drug, or small-arms trafficking relies upon many of the same resources and capacities that can detect and prevent the smuggling of nuclear materials and



equipment. Countering the scourge of infectious diseases or the detection and response to the use of a biological weapon require a functioning disease surveillance and public health infrastructure. By effectively leveraging this security assistance, governments that otherwise would have placed a low priority on nonproliferation have been drawn into more effective partnerships that meet mutual political, economic and security needs.

Conclusions

There is much to learn from the 65-year history of efforts to limit nuclear dangers for international efforts to constrain and reverse the negative effects of climate change. This brief review of aspects of the rich arms control and non-proliferation history offers but a few of the many that could be mined.

1. Articulate ultimate goals. Although feasible steps at any one time may be small and incremental, it is beneficial and important for world leaders to articulate and frequently reiterate the broad, ultimate goals of international efforts. This serves to mobilize political constituencies behind the incremental steps because, despite their relative unimportance, these constituencies can see the steps leading to the ideal objective.

In the nuclear world, for many decades, the ultimate goal of efforts to limit nuclear dangers—that is, eliminate all nuclear weapons from all nations—was articulated primarily by religious leaders and philosophers. Statements by national leaders about seeking to eliminate nuclear weapons were rare and, when made, so carefully hedged as to not be taken seriously. This changed only after 9/11 and other terrorist attacks made clear to a much wider group of high-level officials that the threat of nuclear devastation was no longer solely under the control of governments. As a result, well respected individuals who had held senior foreign policy and military positions began to speak out, legitimating disarmament as a national goal and a policy option that could be discussed among realists. Subsequently, serving national leaders began to articulate

the goal with greater seriousness and appear to be pursuing it in a less cynical manner.

This history highlights the importance of finding validators, men and women who have held responsible positions in government and industry and who come from a variety of political backgrounds and allegiances to articulate the need to make greater progress toward the more far-reaching goals of climate control.

2. Strike a grand bargain but move to subdivide complex agendas into bite-sized pieces to ensure progress wherever possible. Given the disparities among nations with regard to their histories, stages of development, and available resources, it is evident that different states will place differing priorities on climate control, as compared to other national objectives, as well as believe that their contributions to reaching the goal should vary. The history of nuclear nonproliferation is similar—with the nuclear weapon states having perspectives that are far different from states without nuclear weapons. Also, states with advanced civilian nuclear technologies hold different views on possible constraints than do those less fortunate. What is essential is the negotiation of a grand bargain among the haves and the have-nots—an ultimate trade-off that, in broad terms at least, can guide the parties as they seek partial arrangements that can satisfy their respective needs.

When operating at the global multilateral level, in which virtually every government has veto authority—as is the case with the Conference on Disarmament in Geneva—the result can be endless cycles of negotiations or, worse, complete deadlock and a lack of substantive progress. When this occurs, governments must be willing to subdivide an agenda into workable spheres with the goal of making incremental advances through formal regional or even sub-regional processes, or through informal coalitions that owe more to a mutuality of interests than to geographic proximity. Over time, these agreements of selected nations can either play important roles in themselves or grow to incorporate wider groupings of nations. The United States and the Soviet Union/

Russia have made remarkable advances bilaterally toward reducing their nuclear arsenals. The Proliferation Security Initiative, which began as a relatively limited coalition of 11 governments with the common goal of preventing the movement of nuclear materials and dual-use WMD items around the globe, over time has grown into a 97-country coalition involving most, but not all, major stakeholders.⁶⁸

3. Create effective implementing entities. The most successful arms control agreements have all been implemented and monitored by a special multinational organization created for that purpose. Even the U.S.-Soviet/Russian arms control agreements created special bilateral forums in which potential problems could be discussed privately and ironed out. National governments are not sufficient to ensure the effective implementation of accords; they are too busy with other matters and too much embroiled in other national priorities to give implementation of the agreement the attention it needs. Moreover, reliance on national governments risks bringing conflicts having nothing to do with the issue into play.

It goes without saying that creating an implementing organization is a necessary, but not sufficient, condition. The organization has to be well resourced and protected politically. It has to be given a professional staff and the freedom to operate with integrity and in a professional manner. It has to be led by individuals sensitive to the need to maintain the respect and backing of key states, but with the courage to challenge governments when warranted by the facts. It also requires authorities sufficient to the task with which it is charged. The IAEA, for example, until recently, only had the authority to monitor/safeguard declared facilities. This it usually did well, although there have been some weaknesses. The more serious failures in limiting proliferation have been the result of limits on the IAEA's powers – specifically its lack of authority to conduct challenge inspections of undeclared facilities. The “Additional Protocols” give this authority to the IAEA. It remains to be seen whether or not it, and the governments that support it, will provide the resources and political will for these Protocols to be implemented.

4. Proceed with positive agreements even if key nations remain outliers.

Not all countries will be persuaded of the wisdom of an agreement when it is first negotiated. Some will have special circumstances that prevent their adherence or may have other political issues. Still, the conclusion and implementation of important agreements, even when not universal, have the benefit of creating international norms of behavior, focusing attention on outliers, and providing a constant prod to bring recalcitrant states on board as their political circumstances change. They are worth pursuing. For instance, even in the absence of support from key governments, considerable progress has been made in the global effort to address the scourge of landmines. The Ottawa Convention on the Prohibition of the Use, Stockpiling, Production, and Transfer of Anti-Personnel Mines and on their Destruction—an agreement spurred by the nongovernmental community and endorsed by a coalition of “middle powers”—failed to attract the support of several key landmine-using governments, including China, Russia, and the United States. Despite the inability or unwillingness of these countries to formally sign and ratify the agreement, as international resolve has hardened, most holdouts have nonetheless abided by major components of the treaty.⁶⁹ A similar dynamic grew from the conclusion of the CTBT. Although the United States and China have yet to ratify the agreement, both have abided by the principal conditions and have not conducted nuclear testing since conclusion of the treaty. In addition, it has been possible to establish the organization charged with implementing and verifying the agreement, as well as a global network of sensors to accomplish the latter.

5. Don't neglect verification. Although national technical means may well be sufficient to verify adherence to an agreement, the negotiation and implementation of multinational, cooperative forms of verification convey additional benefits. They help build confidence in the regime, facilitate consideration of more far-reaching measures, bring the international scientific establishment into greater support for the effort, and supplement national intelligence systems. Many precedents have been established in the history of

nuclear arms control and proliferation for intrusive means of verification, even at the cost of aspects of national sovereignty. These precedents may be built upon in considering future climate control regimes. Of particular relevance is the growing intrusiveness of these measures. What was considered completely out of the question at the time of the first U.S.-Soviet agreement in 1972—on-site inspectors peering into missile silos to count warheads—is now considered a positive virtue of the NEW START agreement, because of the additional confidence it imparts to each side that the other is abiding by the terms of the agreement. In the field of U.S.-Soviet/Russian arms control, at least, familiarity did not breed contempt; it permitted the military establishments on each side to gain some understanding of each other and far greater trust in the other's professionalism and integrity.

The short-term potential consequences of cheating on an agreement limiting WMDs are more severe than they would be for cheating on a climate control agreement, making intrusive verification perhaps more important in the former than the latter. Even so, cheating on agreements creates cynicism and mistrust, complicates the negotiation of additional measures, and harms relationships among countries that are essential for multinational cooperation. As such, the fact that cheating on climate control agreements would not be immediately catastrophic should not be permitted to stand in the way of efforts to persuade nations to accept verification measures that infringe on traditional notions of sovereign rights.

In considering possible climate control agreements, the greatest verification need would be to confirm national reports on emissions or, if possible, replacing national reporting with reporting by a reputable international organization. The latter seems far-fetched at present. Perhaps a more feasible alternative would be an agreement for international inspectors to spot-check national emission estimates by actually measuring emissions at selected, representative facilities. This would raise another issue often confronted in verification agreements: concerns about the com-

promise of industrial secrets. To avoid this perception, industry representatives should be closely consulted when devising verification protocols and, perhaps, permitted to participate directly in negotiations. In the end, their support will be essential for effective implementation of agreements.

6. Consider radical, unilateral actions when circumstances make them feasible. Although formal treaty commitment are more binding and lasting and build greater confidence, it sometimes is possible to make great leaps forward because of radical changes in political circumstances, either within or between nations. Such opportunities are not to be missed. The United States and the U.S.S.R./Russia have gone from approximately 64,000 nuclear weapons to about 20,000 weapons over the past 30 years.⁷⁰ By far the greater share of those reductions resulted from unilateral decisions (later ratified in treaties) made possible by radical changes in political circumstances. Crises provide opportunities for change. The 1973 War in the Middle East, for example, made possible a peace between Israel and Egypt that has lasted for nearly 40 years. One certainly should not hope for weather-related catastrophes, but should they occur, governments and NGOs should be prepared to move with alacrity to facilitate progress on multinational solutions that can avoid future catastrophes of similar or even greater magnitude.

7. Align goals with other national interests. For many states, neither nuclear risk reductions nor climate change are pressing priorities; their day-to-day needs for development and governance are far more pressing. Moving these states forward on longer-term problems requires making clear to them the additional benefits that might result from actions that are desirable for such objectives. Creative thinking can facilitate progress greatly. By identifying and exploiting the corollary benefits of nonproliferation to governments whose priorities are otherwise elsewhere, progress has been realized in developing common approaches to satisfying common, if disparate objectives. By tightening port and transportation infrastructure security to prevent proliferation, governments realize corresponding benefits in compliance with interna-

tional trade standards that enhance competitiveness. By ensuring tight compliance and cooperation with the IAEA, governments can ensure that their energy diversification strategies involving civilian nuclear power will proceed more efficiently and expeditiously. And by promoting national adherence to the BWC, governments can not only ensure compliance with the World Health Organization international health regulations, but can better tap global aid to implement a comprehensive disease surveillance system and responsive capacity in the event of a public health catastrophe.

8. Incentivize private actors. In today's global economy, the accomplishment of the goals of both nuclear risk reduction and climate control require the active and positive participation of individuals, companies, and NGOs in the private sector. Particularly in the first two cases, it is essential that issues are presented in ways that make clear the benefit to private sector actors of desirable achievements. Similarly, it is essential to involve them in negotiations, indirectly at least, from the earliest stages. Moreover, success in developing a common set of objectives with private actors can yield ongoing and practical support as the regime evolves. As globalization has pushed dual-use WMD technologies into more hands around the world, governments have faced practical challenges in ensuring the nonproliferation of these sensitive items. In some cases where the private sector has inculcated best practices, it has become a critical source of information for governments working, for instance, to break up illicit black market networks of dual-use suppliers. These private companies can also serve as an early warning mechanism. Aberrations in common purchasing patterns of, or requests for, biological pathogens or equipment, for example, may be an early indication of the illicit development of a biological weapons capability. By sharing such information with governments, private biotech and pharmaceutical firms can have a major role in ensuring compliance with international agreements.

CHAPTER 2 ENDNOTES

1. John F. Kennedy, Third Nixon-Kennedy Presidential Debate, October 13, 1960, accessed online at: <http://untreaty.un.org/cod/avl/ha/ctbt/ctbt.html>.
2. See: Arms Control Association, "Fact Sheet: Nuclear Weapons: Who Has What at a Glance," accessed online at: <http://www.armscontrol.org/factsheets/Nuclearweaponswhohaswhat>; and Glenn Chafetz, Hillel Abramson, and Suzette Grillot. 1996. "Role Theory and Foreign Policy: Belarussian and Ukrainian Compliance with the Nuclear." *International Society of Political Psychology*, Vol. 17(4): 727–757.
3. Robert Gates, "Nuclear Posture Review Report: April 2010" accessed online at: <http://www.defense.gov/npr/docs/2010%20nuclear%20posture%20review%20report.pdf>
4. Stewart M. Patrick, *The Global Nuclear Nonproliferation Regime*, (Council on Foreign Relations, September 20, 2010).
5. Daniel Horner, "India Seen Unlikely to Join NSG Soon" (Arms Control Association, December 2010).
6. David Blair, "Iran's Nuclear Programme 'May Spark Middle East Weapons Race,'" *The Telegraph* (May 20 2008): <http://www.telegraph.co.uk/news/worldnews/middleeast/iran/1994117/irans-nuclear-programme-may-spark-Middle-East-weapons-race.html>.
7. See Natural Resources Defense Council, "Archive of Nuclear Data: Nuclear Stockpiles and Forces," accessed online at: <http://www.nrdc.org/nuclear/nudb/datainx.asp>, and Carl Sagan and Richard P. Turco, "Nuclear Winter in the Post-Cold War Era", Sage Publications, Ltd., *Journal of Peace Research* Vol. 30, No. 4 (Nov., 1993), pp. 369-373.
8. See Natural Resources Defense Council, "Archive of Nuclear Data: Nuclear Stockpiles and Forces," accessed online at: <http://www.nrdc.org/nuclear/nudb/datainx.asp>, and International Panel on Fissile Materials, "Verified Warhead Dismantlement" See Chapter 5, *Global Fissile Material Report: "A Path to Nuclear Disarmament."* accessed online at: http://www.fissilematerials.org/ipfm/pages_us_en/disarmament/verifyingwarheaddismantlement/verifyingwarheaddismantlement.php
9. Henry Sokolski. 2009. "Avoiding a Nuclear Crowd." *Policy Review*, No. 155 (June 1, 2009).
10. Office of Technology Assessment, *The Effects of Nuclear War (Congress of the United States, May 1979)*; National Resources Defense Council, *The Consequences of Nuclear Conflict between India and Pakistan*, (June 4, 2002), accessed online at: <http://www.nrdc.org/nuclear/southasia.asp>.
11. "Remarks by President Barack Obama, Hradcany Square, Prague, Czech Republic" (April 5, 2009), www.whitehouse.gov/the_press_office/Remarks-By-President-Barack-Obama-In-Prague-As-Delivered.
12. "Arms Control Inspection: Constitutional Restrictions on Treaty Verification in the United States", *New York University Law Review* (May, 1988).
13. United Nations, "The Treaty on the Non-Proliferation of Nuclear Weapons (NPT)",



- 2-27 May 2005, New York, accessed online at: <http://www.un.org/Depts/dda/WMD/treaty/>.
14. Marvin Miller and Lawrence Scheinman, "Israel, India, and Pakistan: Engaging the Non-NPT States in the Nonproliferation Regime", *Arms Control Today* (December 2003).
 15. United Nations, "The Treaty on the Non-Proliferation of Nuclear Weapons (NPT)," op. cit.
 16. Security Council: 6335th Meeting (AM), "Security Council Imposes Additional Sanctions on Iran", Department of Public Information--News and Media Division: New York, 9 June 2010.
 17. United Nations, "The Treaty on the Non-Proliferation of Nuclear Weapons (NPT)," op. cit.
 18. Tariq Rauf, "Successes of the Nuclear Non-Proliferation Regime," James Martin Center for Nonproliferation Studies (8 October 1999).
 19. Lawrence Scheinman, "Comprehensive Test Ban Treaty," Center for Nonproliferation Studies (April 2003).
 20. "Comprehensive Test Ban Treaty (CTBT)," James Martin Center for Nonproliferation Studies at the Monterey Institute of International Studies (Updated: 02/21/2003), accessed online at: <http://www.nti.org/db/china/ctbtorg.htm>.
 21. United Nations, "The Chemical Weapons Convention (CWC)," Department for Disarmament Affairs, accessed online at: <http://www.un.org/Depts/dda/WMD/cwc/>.
 22. Comprehensive Test Ban Treaty Organization, "The History of Nuclear Testing, accessed online at: <http://www.ctbto.org/nuclear-testing/>.
 23. The Audiovisual Library of International Law, *Comprehensive Nuclear Test Ban Treaty* (September 10, 1996), accessed online at: <http://untreaty.un.org/cod/avl/ha/ctbt/ctbt.html>
 24. Comprehensive Test Ban Treaty Organization, CTBT Fact Sheet accessed online at: http://www.ctbto.org/fileadmin/user_upload/public_information/CTBT_Ending_Nuclear_Explosions_web.pdf
 25. Office of the Deputy Assistant to the Secretary of Defense for Nuclear Matters , International Treaties and Agreements, accessed online at: <http://www.acq.osd.mil/ncbdp/nm/international.html>
 26. See Natural Resources Defense Council, "Archive of Nuclear Data: Nuclear Stockpiles and Forces," accessed online at: <http://www.nrdc.org/nuclear/nudb/datainx.asp>
 27. U.S. Department of State, "Strategic Arms Limitation Talks (SALT I)," accessed online: <http://www.state.gov/www/global/arms/treaties/salt1.html>
 28. U.S. Department of State, "Treaty Between the United States of America and the Union of Soviet Socialist Republics on the Reduction and Limitation of Strategic Offensive Arms," accessed online at: <http://www.state.gov/www/global/arms/starthtm/start/start1.html>
 29. See Natural Resources Defense Council, "Archive of Nuclear Data: Nuclear Stockpiles and Forces," op. cit.

30. U.S. Department of State, "Treaty Between the United States of America and the Union of Soviet Socialist Republics on the Reduction and Limitation of Strategic Offensive Arms," op. cit.
31. U.S. Department of State, "Treaty Between the United States of America and the Russian Federation on Measures for the Further Reduction and Limitation of Strategic Offensive Arms (New START)," accessed online at: <http://www.state.gov/documents/organization/140035.pdf>
32. Daryl Kimball, "The Presidential Nuclear Initiatives (PNIs) on Tactical Nuclear Weapons at a Glance," Fact Sheet: Arms Control Association, accessed online at: <http://www.armscontrol.org/factsheets/pniglance>.
33. Ibid.
34. The White House: Office of the Press Secretary, "Statement by the Press Secretary, 12/27/2010," (December 27, 2010), accessed online at: <http://www.whitehouse.gov/the-press-office/2010/12/27/statement-press-secretary-12272010>.
35. Daryl Kimball, "The Strategic Offensive Reductions Treaty (SORT) At a Glance," Fact Sheet: Arms Control Association, September 2006, accessed online at: <http://www.armscontrol.org/system/files/SORT-AtAGlance.pdf>.
36. John B. Bellinger III, "Our Abandoned Treaties," *The Washington Post* (June 11, 2010).
37. See: CTBTO Preparatory Commission, "Verification Regime," accessed online at: <http://www.ctbto.org/verification-regime/>.
38. International Panel on Fissile Materials, "Verified Warhead Dismantlement" See Chapter 5, Global Fissile Material Report: "A Path to Nuclear Disarmament." accessed online at: http://www.fissilematerials.org/ipfm/pages_us_en/dismantment/verifyingwarheaddismantlement/verifyingwarheaddismantlement.php
39. Andrei Shleifer and Daniel Treisman. 2005. "A Normal Country: Russia after Communism," *Journal of Economic Perspectives*, Volume 19(1): 151–174.
40. See, for example: Brian D. Finlay et al., *Cooperative Nonproliferation: Getting Further, Faster*, The Henry L. Stimson Center, Washington DC: 2007.
41. U.S. Department of State, Bureau of International Security and Nonproliferation, "Interdiction Principles for the Proliferation Security Initiative" (September 4, 2003), accessed online at: <http://www.state.gov/t/isn/c27726.htm>
42. Ibid.
43. Authors' interview with program managers at the Departments of State and Defense (17 June, 2010).
44. George Shultz, William Perry, Henry Kissinger, and Sam Nunn, "How to Protect Our Nuclear Deterrent" *The Wall Street Journal*, January 19, 2010.
45. The White House, "Remarks by President Barack Obama: Hradcany Square," Prague: April 5, 2009 accessed online at: http://www.whitehouse.gov/the_press_office/Remarks-By-President-Barack-Obama-In-Prague-As-Delivered/.
46. Douglas J. Feith and Abram N. Shulsky, "The Dangerous Illusion of 'Nuclear Zero,'" *The Wall Street Journal* (May 20, 2010).
47. Barry M. Blechman, "Stop at START," *The New York Times* (February 19, 2010).
48. "Convention on the Prohibition of the Development, Production and Stockpiling

- of Bacteriological (Biological) and Toxin Weapons and on their Destruction,” accessed online at: [http://www.unog.ch/80256EDD006B8954/\(httpAssets\)/C4048678A93B6934C1257188004848D0/\\$file/BWC-text-English.pdf](http://www.unog.ch/80256EDD006B8954/(httpAssets)/C4048678A93B6934C1257188004848D0/$file/BWC-text-English.pdf)
49. David E. Hoffman, *The Dead Hand: The Untold Story of the Cold War Arms Race and its Dangerous Legacy* (New York: Doubleday, 2009).
 50. Walter Pincus and Mary Beth Sheridan, “Report Findings About Russia Could Complicate Debate on New START Pact,” *The Washington Post* (July 28, 2010).
 51. Amy Smithson, *House of Cards: The Pivotal Importance of a Technically Sound BWC Monitoring Protocol, A Joint Research Report of Academic and Research Institute, Pharmaceutical and Biotechnology Industry, Defense Contractor, and Inspection Veteran Brainstorming Groups*, Report No. 37, The Henry L. Stimson Center (May 2001).
 52. See IAEA, “Status of Additional Protocols,” (as of 20 December 2010), “accessed online at: http://www.iaea.org/OurWork/SV/Safeguards/sg_protocol.html
 53. “Treaty Between the United States of America and the Union Of Soviet Socialist Republics on the Elimination of their Intermediate-Range and Shorter-Range Missiles,” accessed online at: <http://www.state.gov/www/global/arms/treaties/inf1.html>
 54. “Treaty between the United States of America and the Union of Soviet Socialist Republics on the Reduction and Limitation of Strategic Offensive Arms (START I),” accessed online at: <http://www.dod.gov/acq/acic/treaties/start1/text.htm>
 55. “Treaty Between the United States of America and the Russian Federation on Measures for the Further Reduction and Limitation of Strategic Offensive Arms,” accessed online at: <http://www.state.gov/documents/organization/140035.pdf>
 56. K.R. Gupta (ed.), *Reform of the United Nations* (New Delhi: Atlantic Publishers, 2006).
 57. Joshua Pollack, “A Dead-end in Damascus,” www.armscontrolwonk.org
 58. See: Jonathan B. Tucker. 2004. “Strengthening the BWC: A Way Forward.” *Disarmament Diplomacy*, No. 78; and Gillian R. Woollett, “Industry’s Role, Concerns, and Interests in the Negotiation of a BWC Compliance Protocol,” in *Biological Weapons Proliferation: Reasons for Concern, Courses of Action* (Stimson Center Report 24, January 12, 1998).
 59. Zachary K. Johnson, “Background to a Crisis: Revelations to a Secret Program” PBS: Frontline, World, May 2005 <<http://www.pbs.org/frontlineworld/stories/iran403/background.html>>
 60. “No-First-Use (NFU)”, NTI, Database: China, 06/26/2003 accessed online at: <http://www.nti.org/db/china/nfuorg.htm>.
 61. Glenn Schweitzer, *Moscow DMZ: The Story of the International Effort to Convert Russian Weapons Science to Peaceful Purposes* (New York: M. E. Sharpe, 1996).
 62. William J. Broad, “Buffett Helps Create a Nuclear Fuel Bank,” *The New York Times* (December 3, 2010).
 63. Paul Kerr, “International Operation Removes Uranium from Serbia,” *Arms Control Today*, (September 2002).
 64. Nuclear Threat Initiative: NPT Tutorial accessed online at: http://www.nti.org/h_



learnmore/npttutorial/glossary.html.

65. Eli Corin, "Presidential Nuclear Initiatives: An Alternative Paradigm for Arms Control," (Washington, DC; NTI, March 2004).
66. Daryl Kimball, "The Presidential Nuclear Initiatives (PNIs) on Tactical Nuclear Weapons At a Glance", Arms Control Association, accessed online at: <http://www.armscontrol.org/factsheets/pniglance>.
67. Albert R. Ramdin, Assistant Secretary General of the OAS, "U.N. Security Council Resolution 1540 Luncheon at The Finnish Mission to the United Nations," October 28th 2010 accessed at: http://www.stimson.org/images/uploads/ramdin_remarks_10-28-10__4_.pdf, and Brian D. Finlay, *WMD, Drugs, and Criminal Gangs in Central America: Leveraging Nonproliferation Assistance to Address Security/Development Needs with UN Security Council Resolution 1540*, The Stanley Foundation, 2010.
68. Stephen J. Hadley, "Remarks by National Security Advisor Stephen J. Hadley at the Proliferation Security Initiative Fifth Anniversary Senior Level Meeting," Proliferation Security Initiative Fifth Anniversary Senior Level Meeting, May 28, 2008, accessed online at: <http://merln.ndu.edu/archivepdf/wmd/WH/20080528-3.pdf>.
69. United Nations, "Convention on the Prohibition of the Use, Stockpiling, Production and Transfer of Anti-Personnel Mines and on their Destruction," 18 September, 1997, accessed online at: http://www.un.org/Depts/mine/UNDocs/ban_trty.htm and Rachel Stohl, "Landmines Remain Issue in Korea," *The Defense Monitor*, Volume XXIS, No. 5, 2000, Center for Defense Information, accessed online at: <http://www.cdi.org/dm/2000/issue5/Landmines.html>
70. Natural Resources Defense Council, "Archive of Nuclear Data: Nuclear Stockpiles and Forces," accessed online at: <http://www.nrdc.org/nuclear/nudb/datainx.asp>

Chapter 3

CONFIDENCE-BUILDING FOR GLOBAL CHALLENGES: THE EXPERIENCE OF INTERNATIONAL ECONOMIC LAW AND RELATIONS

Thomas Cottier

Introduction

Economic relations among nations are at the heart of extensive bilateral agreements and multilateral institutions. For centuries, in what is called the Westphalian State system based on national sovereignty in the pursuit of a nation's own and shared interests, economic relations have offered an important experience from which lessons applicable to new challenges in environmental policies and climate change in particular may be learned.¹ This is the more relevant as climate change essentially amounts to a challenge within international economic relations. Most of the problems are economic in nature. The impact of climate change policies on economic relations and welfare is a prime concern and will thus be embedded in the overall experience and architecture of international economic law. It cannot be dealt with separately or in isolation.

International economic law essentially deals with market access and conditions of competition on markets.² Trade and investment law and policies, labor standards, and monetary issues essentially serve the goals of reducing or eliminating discrimination favoring

domestic producers and products, through protectionist measures detrimental to welfare and economic growth, while respecting legitimate policy goals, such as the protection of the environment. The main interest in engaging in commitments is based on the pursuit of enhanced market access and the establishment of stable and fair conditions of competition for domestic operators, exporters, and investors alike.

International economic law covers a wide range of topics. In fact, almost all of international law somehow relates to economic interests and relations among nations: commerce; investment; property; labor; monetary affairs; natural resources, including the law of the sea; and environmental law. Climate change mitigation and adaptation thus essentially form part of international economic law. In this chapter, the focus is more narrowly defined: It is limited to trade, labor, investment, and financial and monetary affairs with the main emphasis on international trade regulation. The chapter's purpose is to assess processes of policy and decision making, dispute settlement, law enforcement, and reporting—all of which contribute to verification and building trust, broadly speaking. The chapter is written with a view to identifying potential avenues that, drawing on past experience in international economic law and relations, could be taken up in the international architecture addressing climate change mitigation and adaptation.

The chapter first addresses models used in building the architecture of international economic relations. It briefly expounds the main institutions. With an emphasis on international trade regulation, it discusses the functioning of the WTO, its membership, decision-making processes, dispute settlement, and verification efforts. The chapter offers a number of conclusions and possible ways forward based on the experience and insights gained from international economic relations and law.

Basic Architecture

International economic relations are based on international agreements and partly operate within the realm of international organizations. The architecture shows top-down and bottom-up approaches and mixed constellations. These are being superseded today by informal groupings, such as the G-7, G-8, G-10, and G-20,³ amounting to de facto governance structures seeking to set policy directions, build basic consensus, and influence work undertaken in formal organizations, but not properly regulating areas on their own. They influence work and structures in international economic law, which are characterized by top-down, bottom-up, and mixed constellations.

Informal groupings

Informal groupings of states on the level of heads of states or at the ministerial level are political in nature. They do not operate on the basis of an agreed and formal international framework. At best, their modus operandi is based on informally agreed convention. The need for informal groupings of this kind mainly emerged in monetary affairs. After the United States and others abandoned the gold standard in 1971, the IMF was no longer an appropriate framework for policy coordination.⁴ Such coordination was taken up by groupings essentially composed of the largest economies of the globe. They either meet on ministerial level or among heads of states, in particular the G-7 and G-10. The financial crisis of 2007–2009 (today being followed by the debt crisis) and the process of shifting economic power to emerging economies triggered an expansion of this club model to include emerging economies. The G-20 today comprises countries among the top 28 largest economies (except Norway and Switzerland) representing 85 percent of world GDP, 80 percent of world trade, and two-thirds of the world's population. The G-20 includes 19 countries and the European Union and has met at regular intervals in Washington, London, Pittsburgh, Toronto, and Seoul, mainly while addressing the financial crisis. It will meet again in Cannes (France) in November 2011.⁵



The G-20 is dominated by finance ministers; related areas of economic relations are taken into account, but are clearly not at the forefront. Thus, we hear regular appeals to conclude the current Doha Development Round in the WTO, yet without showing sufficient power to deliver tangible results. Other key issues, such as climate change, have not so far been seriously addressed in this forum. Climate change has remained on the margins. The overall impact of these groupings, in particular the G-20, is difficult to assess. It may develop into a viable network of global governance. Equally, the G-20 may wither as financial markets and currencies stabilize and if the debt crisis stabilizes. The G-20 may be replaced by a different grouping. Success would seem most likely, the more focused the brief and mandate is, while at the same time taking into account all the elements required to address complex issues. Success and impact would seem most limited, the more general the agenda. Pledges made may go unheard; on the other hand, the impact on domestic policy formulation must not be underestimated. The G-20 is an important part of informal global governance and secures at least minimal effects in policy coordination. Such a finding is confirmed by the evolution of the European Council within the European Union. Regular meetings of heads of state began in informal settings of policy coordination in the context of what was called political cooperation beyond economic integration and trade liberalization. Eventually, this body was formalized by the Maastricht Treaty in 1992 and today amounts to the main formal political steering body besides the specialized Council of Ministers, the Commission, the Parliament, and the European Court of Justice.⁶

While groupings without formal agreements raise issues of legitimacy—undermining in particular the United Nations—it is safe to say that a global agenda today can hardly be developed without the inclusion of heads of state of economically and geographically crucial countries. Lack of informal global governance structures, as can be observed in the field of environmental protection, inevitably reduces the weight of the policy field in comparison to those



reaching the agenda of international discourse and coordination among heads of state. To the extent that informal groupings of global governance exist, efforts to bring about a proper balance among the different policy areas involved will be important in the process of preparation and representation within national delegations. Since the outcome is best if groupings meet with a specialized and well defined agenda, it is conceivable to suggest that parallel groupings on the ministerial level could assume the task of coordination of policy making in their respective fields. Thus, it has been suggested in academic discussions that, on conclusion of the Doha Agenda, an executive committee composed of trade ministers within the WTO should be formed to counterbalance the predominant interests of finance ministries within the G-20.⁷

Top-down architecture

Within formal international organizations, top-down architecture and centralization are to be found in the IMF and the World Bank Group. Based on respective international agreements, operations are managed by bodies representing member states within the charter of the organizations concerned.⁸ Management is essentially based on programs and operational agreements entered with members. The IMF and the World Bank Group essentially show no legislative and rule-making activities. Compared to trade regulation, the amount of rules is minimal and has not been able to adjust to changing fundamentals. The rules of the IMF were drafted on the basis of the gold standard.⁹ They have not been properly adjusted to floating exchange rates. The United States has not been interested in disciplining the U.S. dollar as the main reserve currency, and other countries are equally resistant to restrictions on domestic monetary and possibly fiscal policies. Top-down architectures have thus been seen to have difficulties in adjusting to new challenges. The recent changes in membership voting rights have been difficult to achieve; it will be even more difficult to change the substantive rules of the IMF in the wake of the financial crisis.¹⁰ Policy changes are likely to occur within the existing legal framework, taking up initiatives adopted within the G-20.¹¹ Equally, the World Bank Group has not developed a



strong legal framework shaping its policies. It is subject to changing programs and priorities that are largely defined in accordance with the changing perceptions of major donor countries and shareholders.¹²

Bottom-up architecture

Bottom-up architecture and decentralization are to be found in the field of protection of foreign direct investment (FDI), which continues to rely on bilateral agreements and has not formally embraced multilateralism. There are more than 2,700 bilateral investment protection agreements of diverging content.¹³ They are subject to dispute settlement and arbitration. Most of them are open to multilateral arbitration procedures of the International Centre for Settlement of Investment Disputes within the World Bank. For many years, there has been a lack of transparency as to the existence of these agreements and to arbitration awards. The system essentially reflects classical arbitration, the fundamentals of which emerged during the 19th century and which were incorporated into post-World War II bilateral investment treaties.¹⁴

Bilateral and plurilateral trade agreements form another group of bottom-up architecture. Preferences and obligations are accorded in a country-specific manner, taking into account the particularities of the trading partners. These agreements have been in vogue since the end of the Cold War in 1989. The world has witnessed a substantial increase in preferential trade agreements during the past 30 years. Regional initiatives involving a number of countries equally belong to this group of agreements.¹⁵ Most prominent are the current efforts within the so-called Transpacific Partnership Agreement, among the United States, Australia, Brunei Darussalam, Chile, Malaysia, New Zealand, Peru, Singapore, and Vietnam.¹⁶ While formally independent, these agreements are, however, subject to the disciplines of WTO law. They need to comply with the requirements of either a free trade zone or a customs union. These agreements therefore may also be considered to be part of an intermediate architecture, albeit the interface of WTO law and these agreements is not sufficiently developed. Many



of the preferential trade agreements do not comply with these requirements and thus have an independent life of their own.¹⁷

Intermediate architecture: the WTO in particular

The main fields of international economic relations operate on the basis of a multilateral framework and established principles, but allow for mutually agreed but individualized unilateral commitments of members as well as plurilateral agreements which do not entail all the members of a particular international organization (variable geometry). The constitutions of the International Labour Organization (ILO),¹⁸ the World Intellectual Property Organization (WIPO),¹⁹ the Food and Agriculture Organization of the United Nations,²⁰ or the WTO²¹ offer an open framework for negotiations and decision making. Results are partly binding for all members alike and partly open to variable commitments. These organizations have shown extensive output in regulatory terms. The many conventions of the ILO,²² the WTO agreements²³ (formerly the General Agreement on Tariffs and Trade, or GATT), and instruments relating to intellectual property within WIPO²⁴ were all produced within a constitutional framework, leaving sufficient flexibility in terms, albeit options to choose may be limited, in particular in the WTO.

Some organizations, such as the OECD and the United Nations Conference on Trade and Development (UNCTAD), essentially operate as think tanks, supporting efforts made in other forums with research, education, and advice. They have not produced much legislation of their own, and important efforts to do so have failed over time. The main contribution of these organizations consists in developing domestic and international policy options or model agreements or legislation, which eventually find their way into the work of other international agreements and into domestic law. For example, the policy of special and differential treatment was essentially developed in UNCTAD, while new policies of tariffication of agricultural products, replacing quantitative restrictions, or policies for combating tax evasion and offering legal assistance were developed in the OECD. Some of these orga-

nizations are within the U.N. system. Some are outside. The WTO, formally outside the United Nations, is of particular importance in this context.

Progressive liberalization and regulation

Industrial import tariffs at the end of World War II amounted, on average, to 40 percent of the value of the widget (*ad valorem*).²⁵ Additional distortions were caused by extensive imperial tariffs within European colonial systems. Tariffs were mainly set unilaterally, as any other tax, mostly to the advantage of domestic producers. Led by the United States, and based on a set of bilateral agreements concluded since 1934, tariffs were made the subject of international negotiations following the end of World War II. Multilateral trade negotiations after 1947 were conducted within the framework of GATT, a provisional arrangement drawn from the failed International Trade Organization (planned as the 3rd pillar of Bretton Woods). The GATT, together with the substantive principles addressed below, offered a loose framework for international negotiations on tariffs and, subsequently, also for rules and nontariff measures, that is, technical barriers to trade, subsidies, and anti-dumping measures. Importantly, many commitments within this framework were individualized and retained in schedules of concessions for goods. After some 50 years, these efforts resulted in an average of some 4 percent *ad valorem* tariffs for industrialized goods.²⁶ Moreover, most tariffs today are bound tariffs, that is, they cannot be readily increased without offering compensation to the main trading partners.

The same approach also applies today to services under the General Agreement on Trade in Services (GATS). Members inscribe their commitments into an individual schedule of commitments and define conditions of market access on the basis of bilateral or sectoral negotiations.²⁷ Sectoral negotiations are generally conducted once the main trading nations in the field are on board. Yet, it is important to emphasize that sometimes, key players only follow suit. Negotiations on financial services following the completion of the Uruguay Round were undertaken without the United

States, which only joined when the European Union succeeded in rallying a sufficient number of important countries to join the negotiating process. During 1995, and upon entry into force of the WTO agreements, a number of WTO members improved their offers on financial services. The United States thought that these offers were not sufficient and made commitments for existing operations only. The United States also took a broad most-favored nation (MFN) exemption with regard to new entries and operations of all financial services.

With a view to safeguarding existing offers, the European Union took the lead and its efforts resulted in 1995 in the Interim Agreement on Financial Services. The Parties agreed to maintain their offers until 2007 despite continued minimal offers by the United States at the time. The existence of the interim agreement led to a policy change in the United States, which subsequently made a substantial offer in 1997. However, that offer was conditioned on other members further improving their offers for market access. This offer triggered further improvements on the part of others interested in U.S. market access, and an agreement was finally reached in December 2007.²⁸ The example shows that participation of all key players is not always necessary in order to make progress. If a critical mass of participation in an effort can be built, the key player may eventually be convinced and become interested in joining the process.

The WTO has largely retained the philosophy of progressive liberalization of international trade commensurate with commitments that do vary from country to country. However, WTO law also developed common rules and minimal standards in the field of nontariff barriers. Members are obliged to comply with these rules in shaping and applying their domestic regulations. The most sophisticated minimal standards can be found today in the field of intellectual property rights with the so-called Agreement on Trade-Related Aspects of Intellectual Property Rights (TRIPS). This agreement amounts to a substantial limitation of national sovereignty in the field.²⁹ It is no coincidence that this comprehen-

sive set of rules has triggered much more criticism from developing countries than the much more flexible disciplines on services in GATS.

Progressive liberalization, at the same time, is combined with the application of general principles, in particular a ban on quantitative restrictions and nondiscrimination, to secure equal conditions of competition. Members are obliged to grant MFN treatment, that is, they have an obligation to extend all privileges granted to any country to all members alike. Members are obliged to grant national treatment, that is, to treat imported goods no less favorably than domestic goods. In services, this principle only applies to the extent that a product is included in the list of concessions. Members are subject to transparency requirements. This architecture operating within a constitutional framework of a multilateral agreement and having a number of defined exceptions has produced a considerable number of additional agreements and instruments over the past 50 years.

Operating within so-called trade rounds, the WTO was able to take up new challenges and to produce new legal instruments with a philosophy of progressive regulation. While these agreements were voluntary under GATT, most of them today are part of a mandatory package. They entail agreements specifically relating to the operation of tariff measures, such as on rules of origin and customs valuation. Most of them were developed to address nontariff barriers, such as subsidies, anti-dumping, and technical barriers to trade. These instruments began to be gradually built following the Kennedy Round (1964–67), and were revised and improved in subsequent rounds of negotiations. In the Tokyo Round (1973–79) and the Uruguay Round (1986–93), the emphasis was clearly on improving existing agreements and adding a set of new agreements relating to new issues at the time, in particular food standards, intellectual property protection, and the liberalization of services and agriculture, which thus far had largely benefited from extensive exemptions to GATT disciplines.³⁰ These agreements are subject to dispute settlement and international

law enforcement and have been reasonably effective among competing nations on the world markets. They are currently subject to further revision in the ongoing Doha Development Agenda negotiations of the WTO. Thus, based on a framework within international organizations, additional instruments have emerged and are being revised and amended, while new agreements and instruments are added on to the multilateral system.

Package deal

The effort to transform the GATT into the WTO, which took effect in 1995, was mainly motivated by the need to bring about a comprehensive package of a great number of different and diverging instruments. To this effect, the WTO as an international organization was properly formed. The package essentially combined the results of negotiations in goods and in the new areas of services and intellectual property. While developed countries had a keen interest in introducing enhanced intellectual property protection and market access in services, developing countries were mainly interested in progress in liberalization of trade in textiles and agricultural products. The combination of diverging interests, which on their own would stand little chance of being accepted, allowed the Uruguay Round negotiations to be successfully concluded.³¹

The package deal also was motivated by past experience. The model of variable geometry of the Tokyo Round Agreements left it to members to decide whether they wanted to join the new agreements. Many developing countries chose to abstain. This not only resulted in complex legal constellations, but tended to increase the gap between developed and developing countries. While the former were subject to the pressures of continuous and substantial trade liberalization in various sectors, the latter continued to operate on the basis of existing regimes and privileges.

The package of the Uruguay Round deal does not comprise the totality of instruments under the WTO but has a few exceptions of so-called plurilateral agreements. The multilateral Agreement on Government Procurement today is the most important example

for which no general obligation to participate exists. All over the world, governments are important consumers of goods and services and often are in a position to control contractual terms and to choose suppliers. The monopoly powers lend themselves to abuse and protectionism which, in return, reduces international trade and investment. The Agreement on Government Procurement therefore sets out tendering procedures and secures transparency. As a general principle, it obliges governments to seek public tenders and honor the most efficient offer of goods and services. While the agreement clearly seeks to improve good governance and indirectly addresses corruption, most members of the WTO chose to abstain from multilateral disciplines in the field. Horizontal efforts to develop general disciplines on government procurement within GATT law so far have failed. Yet, additional members may join the agreement eventually. Thus, China is currently considering membership in the Government Procurement Agreement. Plurilateral agreements therefore offer the potential to gradually enhance membership and commitments over time.

Critical mass and graduation

The current divergence between industrialized and developing countries within the WTO has given rise to the debate in trade diplomacy and academia—in particular in light of the stalling Doha Development Round—as to whether the system should return to voluntary membership in specialized agreements or whether a package deal and single undertaking should be retained. Since the end of the Uruguay Round, geopolitical constellations have changed toward a multipolar world that renders comprehensive package deals more difficult, if not impossible to achieve. There is a strong view among policymakers advocating a doctrine of critical mass and variable geometry operating on the basis of MFN.

Critical mass is meant to involve all countries that play a significant competitive role in the trade of a particular product, for example, defined by trade shares. Provided that a sufficient number of economically important countries participate and offer market access, others may not need to commit, but will still

reap all the benefits. Because rights and obligations are subject to MFN treatment, these countries are given a free ride as a result. However, because those countries not forming part of the critical mass do not effectively compete, free riding does not amount to a distorting problem in reality. Only once a nonmember starts competing in the field will pressures increase to include its trade under the disciplines of the agreement. Moreover, members are able to claim nullification and impairment of benefits and to bring so-called non-violation complaints as discussed below.^a

Variable geometry^b suggests returning to optional additional instruments under the overall umbrella of the WTO. Members would be free to join or abstain. A return to variable geometry in the WTO, however, also implies that the gap between those committed and those uncommitted, as discussed earlier, will increase as the latter group of countries is not forced to undertake appropriate adjustment of structures and is therefore likely to fall behind compared to countries that are under such pressures from international commitments. Variable geometry exists in principle within the European Union. Groups of member states are allowed to move ahead of others but essentially depend upon consent to do so. The monetary Union of 16 members out of 27 is the key example. Another one is the so-called Schengen/Dublin system which removes border controls among members and coordinates asylum policies. Not all E.U. members are part of it. In particular, it does not apply in the United Kingdom and Ireland. Otherwise, and generally speaking, variable geometry has rarely been used as outsiders tend to block fast-track avenues for others that risk

a. This is provided for under Article XXIII of the GATT (1947), which states that "If any contracting party should consider that any benefit accruing to it directly or indirectly under this Agreement is being nullified or impaired or that the attainment of any objective of the Agreement is being impeded as the result of (a) the failure of another contracting party to carry out its obligations under this Agreement, or (b) the application by another contracting party of any measure, whether or not it conflicts with the provisions of this Agreement, or (c) the existence of any other situation, the contracting party may, with a view to the satisfactory adjustment of the matter, make written representations or proposals to the other contracting party or parties which it considers to be concerned."

b. This refers to the idea that every commitment is not binding on every country; rather the extent to which a particular commitment may be binding or not is country-specific.

leaving them behind. It is much more common to negotiate and seek compromise and an agreement that allows all members to participate in the end. Taking into account critical mass and the shortcomings of variable geometry, the doctrine of graduation^c is currently being developed. It entails a single undertaking^d but seeks to differentiate rights and obligations on the basis of defined economic factors and indicators. Countries passing defined thresholds would then reach a stage where new obligations will kick in and take effect. Economic criteria and indicators depend on the context but generally include GDP, world trade shares, dependence on international trade, and size of population or levels of innovation. It is essentially a matter of addressing and measuring the level of competitiveness of a country as a whole as well as in specific sectors. Also, it would be possible to rely on softer factors, such as the Human Development Index. Provisions based on graduation exist in the agreement on subsidies, addressing the ban on export subsidies. Importantly, these factors and indicators need to be defined, *ex ante*, in negotiations. Once a member reaches the threshold, obligations and rights take effect and may be enforced by way of dispute settlement.

These efforts are very much only just beginning and often are resisted by developing countries. Graduation, so far, has meant them losing privileges, for example, when graduating from a least developed to a developing country. Incentives therefore need to be revisited, and it is a matter for current research^e to define appropriate thresholds, economic indicators, and incentive structures that are suitable for use in a particular constellation. For example, an agreement could provide that members graduating and thus assuming additional obligations also obtain additional rights relating to market access and investment protection. This could

c. The term is defined by Cottier (2006) to denote the framing of rules in a manner that accounts for different levels of social and economic development as a matter inherent to the rule itself.

d. A term, in trade negotiations, that requires participants to accept or reject the outcome of multiple negotiations in a single package, rather than selecting among them. This is the principle on which negotiations take place under the GATT/WTO.

e. Some suggestions have been provided in this area by Stevens (2002), Keck & Low (2004) and Cottier (2006).

be linked to enhanced access to the labor market and education, knowledge transfer, or recognition of diplomas and professional qualifications. Such an agreement would be combined with mutual recognition of product standards. Securing legal security amounts to one of the most important aspects. It is a matter of further refining the idea of rights obtained when joining the WTO. Much more work is needed on what, in my view, is a promising approach.

The main challenge is to address the incentive problem under the principle of MFN, which does not generally allow preferential treatment except for all members of the WTO alike. Graduation is meant to replace Special and Differential Treatment,^f which essentially has been operating on granting exceptions and longer time frames for implementation under Part IV of GATT, which was introduced in 1966 following the debate on a New International Economic Order (NIEO) but which has not been able to successfully and effectively address the needs of developing countries, with the exception of the General System of Preferences^g under the so-called Enabling Clause.^h The Enabling Clause, adopted in 1979 in response to pressures from developing countries, allows industrialized countries to offer lower tariffs to developing countries without violating MFN. The determination and selection of tariff lines, however, is unilateral and conditional and may be withdrawn at any time. The European Union, for example, operates a comprehensive zero tariff scheme for least developed countries (“everything but arms”).ⁱ Developing countries have been benefiting from the scheme to the extent that MFN tariffs were substantial. With decreasing tariffs, these privileges wither

f. This is the term for the set of GATT provisions that exempt developing countries from the strict trade rules and disciplines that apply to the developed countries.

g. The General System of Preferences was effectively established in 1971 through a ten-year waiver to the MFN clause of GATT Article I and allowed developed countries to accord more favourable treatment to products originating from developing countries.

h. Formally termed as ‘Differential and More Favourable Treatment, Reciprocity and Fuller Participation of Developing Countries.’

i. This is the European “EBA Regulation” (“Everything But Arms”), Regulation (EC) 416/2001 adopted in February 2001, which grants duty-free access to imports of all products from least-developed countries (LDCs), except arms and ammunition, without any quantitative restrictions (with the exception of bananas, sugar and rice for a limited period).



away, and that partly explains the resistance of developing countries against agreement to MFN based tariff reductions and their seeking multilateral commitments securing the benefits under the Enabling Clause. Privileges should no longer be withdrawn unilaterally but form part of overall binding trade concessions.

Top-down and bottom-up negotiations

Intermediate architectures largely vary in terms of how additional instruments are developed. In U.N. organizations, such as WIPO, the mode has often been top-down with the Secretariat offering extensive drafting for consideration by members, leaving little room for proper negotiations and member-driven inputs. The ILO shows the particular feature of tripartite negotiations where governments, employers, and trade unions are all involved in the process. In WIPO, draft agreements were for a long time almost exclusively prepared by the organization and its services. In GATT, the process has always been bottom-up. It has been organized and undertaken in so-called trade rounds of which, so far, eight have been completed and the ninth (the Doha Development Agenda³²) has been under way since 2001.

As a first step, GATT members negotiated the scope and terms of a trade round in an essentially political process. Once agreed, the framework offered the basis for the establishment of a negotiating structure. That structure would partly overlap with the standard committee structure of the organizations, and partly it would create new ad hoc bodies for the purpose of the negotiations addressing new topics in particular. These modalities have allowed flexible responses to an agreed agenda for trade negotiations. Proposals would all come from members. GATT earlier and the WTO today have been member driven, with the Secretariat assuming a supporting role. After discussion, negotiating proposals may find their way into bits and pieces of drafting based on which final agreements would emerge.

The bottom-up process is a particular feature of multilateral trade negotiations. Its origin is in the bilateral tariff negotiations that

were used during the first rounds of GATT. The Parties to the Agreement would bilaterally negotiate tariff concessions with the prime supplier or with those countries having initial negotiating rights. It was only on completion of these negotiations that results would be made subject to MFN treatment. Eventually, members moved into multilateral negotiations by focusing on formulas for tariff cuts, no longer negotiating line by line, or by engaging in sector-specific initiatives on the basis of critical mass. The same process, moving bottom-up from bilateral negotiations to sector-specific multilateral negotiations, is also likely to evolve in the field of services, which today are still operating on the basis of bilateral requests and offers. All these steps are taken on the basis of consensus, discussed later, working through small groups that eventually are extended to include all parties in a process of consultation and negotiations.

International economic law organizations are generally shaped as international organizations without supranational powers. They may adopt decisions and new instruments by majority rule, but members are only bound if they agree to implementation. Supranational organizations, on the other hand, are given delegated powers to make binding decisions on members and individuals alike against their own will. Among the existing organizations, the European Union and the IMF may be considered to have supranational powers to the extent that they can make decisions affecting members and individuals against their own will and not requiring consent. A clear distinction between international and supranational structures, however, is increasingly difficult to draw. Some organizations are difficult to classify. The WTO formally is an international organization but is equipped to impose decisions on members in judicial dispute settlement, and economic sanctions may be imposed on a member. At this stage, it is important to stress that these instruments evolved over time and are based upon the desire to contain unilateral blocking and retaliatory powers of large nations, in particular the European Union and the United States. The dispute settlement system, which will be discussed shortly, gradually evolved from a conciliatory to a legally



binding system. Except for basic provisions, it was developed bottom-up on a case-by-case basis.

In conclusion, it is safe to say that international economic law has been most successful when operating within the constitutional framework of an international organization with shared principles and procedures, while leaving ample room for variable geometry in terms of commitments commensurate with levels of social and economic development. Clearly, bottom-up approaches within constitutional structures have been more successful than top-down approaches seeking to define uniform and one-size-fits-all solutions. Variable geometry has been used with mixed results. Current efforts in academia focus on critical mass, seeking to include all main players while granting benefits under MFN. Efforts equally focus on graduation, seeking to develop the threshold within single agreements based on which rights and obligations are triggered commensurate with the degree of social and economic development and competitiveness achieved. The modus operandi within an international organization is more important than whether or not it is within or outside the U.N. system. Also, it is not relevant whether an organization is formally considered international or supranational. It is more important to look at the impact and effect of decisions and the possibility of adopting sanctions against a member whose conduct is in violation of its obligations.

Participation and Membership

States operate international economic relations essentially on the basis of domestic law and international agreements. They adhere to international organizations in accordance with procedures set out in the respective constitutions of the organization. It is important to note that membership in some organizations is essentially free, while for others, commitment and concessions need to be made beyond payment of membership dues and participation in the life of the organization. Most organizations do not come with a cost, and membership is easily attained and attached to U.N. membership. Some organizations, such as OECD, are limited to

countries that have attained certain levels of social and economic development, and membership is decided by the existing member states of the organization.^j Exceptionally, membership requires in-depth negotiations. This is the case for membership in the Bretton Woods institutions, which require financial commitments and guarantees.^k It is particularly the case for the WTO.

Accession to the WTO, and formerly to GATT, is based upon a lengthy process of accession negotiations. States or separate customs territories seeking membership obtain the status of observers.^l The process of accession entails extensive examination of the trade and economic policies of the candidate. Questions and answers form the foundation of the multilateral negotiations of the Protocol of Accession.^m Negotiations on tariff concessions and service commitments take place bilaterally. The results of these negotiations are eventually inserted into the schedule of concessions of the candidate.ⁿ In 1947, the GATT started with 23 founding members. Today, the WTO has 153 members, and some 30 countries are in the process of negotiating membership.³³ Within a few years, the WTO will be universal in scope. The accession of China in 2001 marks the most important change to the multilat-

j. OECD (2011), OECD Enlargement, available at http://www.oecd.org/document/42/0,3746,en_2649_201185_38598698_1_1_1_1,00.html.

k. Lastra, R.M., *Legal Foundations of International Monetary Stability*, Oxford, Oxford University Press, 2006, p. 317 et seqq.

l. Williams, Peter John (2008), *A Handbook on Accession to the WTO*, WTO Secretariat Publication, Cambridge.

m. The applicant has to submit a memorandum on its trade regime and supporting data. Following the circulation of the Memorandum, interested WTO Members are invited to submit questions in writing. Once Members are satisfied that the Memorandum and the replies to the questions provide an adequate factual basis to proceed with the examination of the applicant's trade regime, a Working Group will be established to carry out this task. See Williams (2008), pp. 34-38.

n. Bilateral negotiations are held confidentially. However, the results of all bilateral negotiations must be 'multilateralized' according to the principle of MFN. Therefore, all the agreed minutes (containing the result of bilateral negotiations between the applicant and the interested WTO Member) are sent to the WTO Secretariat which will put the best results into the final draft schedule of concessions. On the one hand, concerning the goods part of the schedule, it is relatively easy to determine the best deal as this part contains figures. On the other hand, when it comes to the comparison of service commitments, it might not always be an easy task to determine the best results. Therefore, the draft of the schedule of concessions will again be circulated to Members for a final check and, if needed, for dealing with inconsistencies during the sessions of the Working Party. See Williams (2008), pp. 40-44.

eral system in recent years. It has had a profound effect both in China and in the world economy. China was willing to limit its autonomy in order to obtain safe and secure MFN treatment and market access abroad.³⁴ Competing economies were interested in developing and stabilizing foreign direct investment in China and in tapping into a large labor market. Accession to the WTO is subject to consensus that allows all members to insist on their specific demands prior to agreement to membership. This gives important powers to existing members in defining the terms of acceding ones.^o Thus, the protocol of accession of China contains a number of requirements reinforcing the rule of law beyond existing standards under the general law of the WTO.^p Small countries are able to settle long-standing problems with large neighbors prior to consenting to membership. For example, Russia's neighbors are making good use of this power prior to consenting to the impending membership of the newcomer.^q

International economic organizations imposing costs of entry and agreed limitations in the exercise of national sovereignty and regulatory powers are more important in real terms than those without such costs. Importantly, entry costs and limitations of sovereignty do not deter countries from applying for membership. Costs to join do not prevent universal membership in an economic organization. Membership depends much more on the advantages and rights that countries may draw from membership. Joining and participating in the Bretton Woods institutions of the

o. This may even create a certain imbalance of rights and obligations between different WTO Members entailing the risk of rendering the process of accession more difficult for other applicants, Members that were asked to pay a high price for their accession could feel tempted to ask other applicants to pay an even higher price.

p. In the dispute on China – Measures Affecting Trading Rights and Distribution Services for Certain Publications and Audiovisual Entertainment Products (WT/DS363/R; §7.281), the panel stated: “The preamble to the Accession Protocol refers to the fact that these terms are the result of negotiations between the WTO and China. This being so, we must be mindful of the possibility that the Accession Protocol may impose obligations on China that are not imposed on other Members under the WTO-Agreement, or are stricter than those that are applicable to other Members”.

q. However, it should be noted that once almost all of the interested Members have come to terms with the applicant, a Member still negotiating bilaterally might feel an increasing pressure to conclude its negotiations quickly.

IMF and the World Bank offer monetary safety valves and access to credit and support that are considered to outweigh conditionalities imposed on using facilities and programs. Signing on to international labor standards assists in stabilizing domestic labor relations, containing unfair labor practices abroad, and enhances a country's international reputation. Joining the WTO offers the prospects of stable market access abroad and of containing protectionist forces at home. These advantages are considered important and worthwhile when taking into account limitations to national sovereignty and self-determination.

Decision Making in International Economic Relations

Decision making in the field of international economic relations shows the wide variety of different modes to be found in international law. It reaches from unilateral action to bilateral treaty making, to multilateral negotiations and decision making within international organizations and their bodies.³⁵ The IMF and the World Bank operate on the principle of weighted voting based on shares allocated to members,³⁶ while other organizations are organized on the principle of one state, one vote. The WTO is formally known as a system of one state, one vote with qualified majorities or unanimity being required in specific constellations. The practice of voting in international economic relations, however, is generally based on consensus diplomacy instead of formal voting.³⁷ Decisions by consensus are made if none of the members present in the room objects. This does not require explicit support and affirmation; it is sufficient that a member is able to live with a particular decision. Consensus diplomacy is backed up by formal voting structures that, in return, may influence the formation of consensus.³⁸ Thus, consensus building in managing the IMF and the World Bank is informed by weighted voting and the blocking powers attached to it. This explains why reallocation of voting rights was difficult to achieve, although formal voting is rarely used.

Consensus diplomacy has a long history. It is rooted in the requirement for agreement that may be implicit (acquiescence) or explicit. The practice of consensus offers all countries alike the power to object and thus to control decisions without the need to explicitly endorse a particular decision; it is sufficient to be able to live with it. But most importantly, consensus establishes an informal setting for negotiating and influencing certain decisions, depending on the power of participating countries. In the WTO, developing countries amount to some 20 entities (counting the European Union as a single unit) representing 50 percent of world trade. If voting were to take place on the basis of one state, one vote, real and formal powers would no longer match, and larger countries would be tempted to informally leave the multilateral framework. In reality, the consensus requirement, while generally considered to guarantee sovereign and equal rights, is essentially to the advantage of large countries as smaller nations cannot afford to block decisions as frequently as do the governments of large nations. Some are more equal than others. Consensus does not replace the impact of power.³⁹ The need for consensus reinforces the power of smaller countries in the early stages of negotiations, in particular in shaping a negotiating agenda. It supports them on conceptual issues. The further negotiations progress, the less consensus by all members is relevant. In the process of adopting a new package deal, most members of the WTO would like to object to one point or another of a draft agreement. Yet they refrain from doing so because they are not in a position to impose their own views, they depend on a functioning multilateral system more than others, and they do not wish to jeopardize advantages obtained in other areas. It is fair to say that the conclusion of the current Doha Development Agenda requires the agreement and consensus of the six major trading nations, Brazil, China, the European Union, India, Japan, and the United States. If agreed, consensus encompassing all the members of the organization can be readily built and achieved.

Consensus has been successful in bringing about new agreements, in particular in the WTO compared to efforts in other organiza-



tions operating by open voting, such as WIPO. They reflect the art of diplomacy of gradually building agreement. That is normally built by starting with a proposal to which, in successive steps, other members are exposed and their support sought. In order to do this, needs of the members concerned are taken into account. Up until the Uruguay Round, the critical mass for consensus essentially entailed the United States and the European Union. Once basic agreement was achieved, it could be further expanded to all of the membership, with many or fewer additional modifications. The Agreement on Agriculture is a case in point. At the time, it was based on the bilateral deal (Cairns agreement) between the United States and the European Union.⁴⁰ Other agreements were constructed step by step, building consensus on the basis of building blocks. The TRIPS agreement is perhaps the most important example here. The agreement comprehensively addresses mandatory standards on intellectual property protection with which members of the WTO must comply. Employing the different traditions and domestic standards of intellectual property in industrialized countries as building blocks, common and shared international minimal standards emerged. During the Uruguay Round of multilateral trade negotiations (1986–1993) at which TRIPS came about, basic consensus between the United States and the European Union was required as the starting point.⁴¹ Today, these consensus-building processes entail a larger group of key players who have to reach basic agreement before the extension of agreed building blocks to other members can take place. The processes now also include Brazil, India, China, and Japan.

The evolution toward a multipolar world renders consensus building more difficult, and this may be one of the reasons, among the substantive ones, why the Doha Development Agenda of the WTO is difficult to complete.⁴² It has certainly contributed to the extensive delay of the negotiating agenda. Trade diplomacy continues to operate on the path of consensus and does not see any need for structural change. Whether or not the Doha Development Round can be completed essentially depends on the consensus of major industrialized and emerging economies. In academia, the need for structural change is emphasized mainly as a result of the evolu-

tion of a multipolar world. The question has been raised whether the WTO should not develop toward a system of weighted voting that could effectively back up consensus diplomacy. The idea behind the model allocating voting rights on the basis of a number of factors, including percentage of world trade, degree of dependence on foreign trade, size of population, and GDP is to avoid the blocking of decisions by a single member alone.⁴³ In practice, these ideas are still largely ignored and refuted, as consensus is considered the most suitable modality for preserving sovereign rights of members. At the same time, it is largely ignored that the power to block consensus is essentially limited to large powers and that extensive threat of, or use of, consensus blocking by developing countries has contributed to a shift toward preferential agreements incurring additional burdens, which developing countries would not be likely to incur within the multilateral system. Smaller countries therefore pay a price. And least developed countries, not of interest for preferential agreements, are the main losers from extensive consensus-based diplomacy in the WTO. They, therefore, are clearly disincentivized from blocking consensus and are generally interested in supporting multilateral solutions.

Decision making in the ILO is of particular interest as it is operated on the basis of a trilateral model. Negotiations take place among government, employers, and trade unions. The model has produced a considerable number of conventions and standards, including core labor standards, albeit without mandatory membership. ILO conventions are adhered to by members on an individual basis. There are no package deals, and weak levels of enforcement and monitoring further encourage members to ratify instruments at little cost. The effectiveness of ILO instruments thus depends heavily on the status of such agreements in domestic law. In most countries, such agreements require implementation and are thus subject to the constraints of the domestic political process. The main impact of the international system consists in providing the opportunity for dialogue and confidence building among government, employers, and employees in a comparative international setting.

Dispute Settlement

International economic law generally shares the weakness of international law in terms of dispute resolution and enforcement of judicial decisions by international bodies. Bilateral agreements in the field of international economic relations traditionally have not provided for legal dispute settlement. The evolution of investment protection agreements since the 1960s has been a reaction to this lack. Investors were enabled to sue states directly in investor–state arbitration. The extensive Iran–United States Claims Tribunal⁴⁴ is a pertinent example. As a result of the hostage crisis (1979–1981), the Iranian revolution, and the taking of U.S. property in the country, it was agreed to set up a court of arbitration in the Hague to address U.S. claims of compensation against the Iranian Government. Extensive attachment of Iranian property in the United States brought about the leverage to settle these claims in court. Hundreds of judgments have been passed. The system of protection in investment law transgresses the principles of diplomatic protection and has brought about substantial involvement of the private sector. Yet it remains an exception. Normally, dispute settlement is limited to state-to-state constellations, and the private sector has no direct say in it, while playing an important role in instigating claims and international disputes. The North American Free Trade Agreement (NAFTA) pioneered dispute settlement in trilateral agreements,⁴⁵ largely based on the GATT model.

Most international organizations are devoid of effective dispute settlement. This is true of the IMF, the World Bank, WIPO, ILO, and other U.N. organizations. While the International Court of Justice in law has jurisdiction, it is interesting to observe that hardly any cases have been brought in the fields of international economic law beyond investment protection (Barcelona Traction,⁴⁶ *Elsi case*⁴⁷).

Dispute settlement is most advanced in the WTO. Developed bottom-up since the 1950s in the GATT, dispute settlement gradually emerged as the legal instrument of dispute resolution codified



and further developed by the 1995 Dispute Settlement Understanding of the WTO.⁴⁸ Members are obliged to respond to complaints brought against them in consultation and subsequent legal proceedings before a panel and, on appeal, before the Appellate Body. Findings of a panel can be refuted to the effect that they are appealed on legal issues to the Appellate Body. The losing party can lodge an appeal to the Appellate Body on questions of law, but not on contentious factual issues. The winning party generally will defend the findings of the panel but has the possibility of lodging a cross appeal, that is, of challenging selective findings of the panel in its own right (cross appeals). The system does not allow a member to reject a verdict of the Appellate Body that has been submitted to the political Dispute Settlement Body, which formally has to endorse the findings of panels and the Appellate Body—except if there is consensus to the contrary (reverse consensus) that necessarily also applies to the winning party. In the more than 350 disputes submitted to the system since 1995, no final finding has been rejected so far.

Members are obliged to implement the findings of the report, that is, to withdraw measures or adjust the law. They are generally supposed to adjust legislation within 18 months. Members are allowed to offer compensation instead. Compensation is not pecuniary, but entails reductions of market access restrictions, normally lowering tariffs, in order to reestablish an overall balance of reciprocal trade concessions. Today, compensation in market access is not generally of interest to the specific sector affected as it does not bring about direct relief. Moreover, it does not entail compensation for past harm. Lack of implementation triggers proceedings to bring about the withdrawal of trade concessions on the part of the winning party. If disputed, the amount of concessions in dollar equivalents per annum is defined in arbitration. Members are not entitled to suspend concessions except if authorized in accordance with the rules of the WTO.

The WTO dispute settlement has evolved during the last 15 years as the most effective and efficient system of dispute resolution



available in international law. It has a high rate of compliance.⁴⁹ In most cases, governments are able and willing to comply with the rulings, sharing a common interest in avoiding further tensions and trade restrictions. Implementation has been difficult only in a few cases that were politically sensitive and inherently involved national parliaments. For example, the European Union persistently refused to implement the findings of the *Hormones* case,⁵⁰ or the *GMO* case,⁵¹ while the United States persistently failed to change its laws on anti-dumping (zeroing).⁵² By and large, however, WTO rulings are being respected, albeit grudgingly, even by national legislators. Thus, the U.S. Congress changed tax legislation, following the ruling in *United States—Tax Treatment for “Foreign Sales Corporations,”*⁵³ and removed, albeit not to the full extent, subsidies (tax breaks) granted to U.S. companies operating abroad. The United States furthermore changed policies relating to the importation of reformulated gasoline,⁵⁴ remedying violations of national treatment, and also its policies relating to imposing the use of turtle-saving devices in the shrimp industry of other countries.⁵⁵

The WTO dispute settlement system offers equal procedural rights to all members alike. It has been mainly used by larger countries, as these countries also have at their disposal sufficient retaliatory power due to their market size. Smaller countries, if they win a case, do not have the possibility of imposing effective sanctions that could support compliance by the losing party. Efforts to bring about collective sanctions allowing for coalitions of affected smaller countries have not been properly discussed so far. Also, the system has been limited to pro-future remedies: It does not offer the basis of financial compensation and damages. In practical terms, the system allows countries to violate the law without substantive costs and to simply abolish a measure once it has been ruled inconsistent with international law. Despite ambitious time frames, it normally takes two to three years to fully adjudicate a case in the WTO. In the field of trade remedies—that is, safeguard measures, countervailing duties to subsidies, and anti-dumping—the lack of retroactivity undermines the WTO’s effectiveness.



The success of WTO dispute settlement raises issues of the balance of powers between legislative and adjudicative functions in the process and life of the WTO. It has been argued that the stalling of negotiations and active recourse to dispute settlement have produced an imbalance that should be remedied.⁵⁶ On the one hand, it has been suggested that the role of dispute settlement be reduced and adjusted to the more modest role of lawmaking in negotiations and traditional perceptions of state sovereignty.⁵⁷ On the other hand, it is argued that reform of the negotiating process is required, including weighted voting, in order to bring about proper avenues for legislative response to case law and the judicial function of the WTO.⁵⁸ The latter view is closely related to the effort to strengthen the constitutional functions of international law and to provide a framework able to cope with the challenges of a globalizing and highly interdependent world economy.

In conclusion, the WTO model of dispute settlement, emerging bottom-up and case-by-case before it was codified, offers an important model to consider in other areas of international economic law.

Monitoring and Surveillance

In general

International economic law has a variety of mechanisms to monitor the implementation of obligations, short of dispute settlement. These mechanisms essentially consist of reporting requirements, which in turn are differently shaped in terms of process and participation of third parties and international organizations. Reporting requirements are not present in all of the organizations. Bilateral investment agreements do not contain reporting requirements. Reporting is limited to services offered by OECD and UNCTAD, mainly to the benefit of the information of private investors. WIPO does not require countries to regularly report on the evolution of intellectual property rights while reporting is the main and practically the sole tool to monitor implementation of labor standards.⁵⁹ The same is true for the OECD with its country-based reports,

and country-specific reports in financial institutions.⁶⁰ Reporting obliges governments to assess the state of play and to coordinate work among different departments, which is useful as a fact-finding exercise in its own right. Obligations in WTO are discussed below. Reporting in economic institutions is generally reliable and backed by economic factors and analysis. It enhances domestic awareness of problems, and exposes countries to scrutiny within international organizations. It offers a basis for naming and shaming policies, exerting pressures to bring about changes in policy and law. It is an important part of learning processes.

Trade policy review mechanism

Members of the WTO are obliged to submit periodically to a review of their trade policy under the Trade Policy Review Mechanism (TPRM). The four major trading powers (United States, European Union, China, and Japan) are reviewed every two years (alternating with an interim report). The countries ranking 5 to 20 are reviewed every four years, and other countries are subject to review every six years.⁶¹ The Trade Policy Review Body (TPRB) bases its work on a report submitted by the member under review and a report drawn up by the WTO Secretariat under its own responsibility.⁶² Member governments actively participate in preparing the latter report, but findings are the sole responsibility of the WTO Secretariat. Draft reports are discussed by the membership of the WTO in two sessions of the TPRB with a day in between.^r Members may ask additional questions and seek further information.^s The reports are important sources of information, transparency, and consultation.

r. Paragraphs 8 to 15 of the Rules of Procedure for Meetings of the Trade Policy Review Body (WTO Document WT/TPR/6/Rev.2).

s. Paragraph 15 of the Rules of Procedure for Meetings of the Trade Policy Review Body reads: "Replies by the Member under review should be distributed in writing; advance questions submitted by the two-week deadline before the start of the TPRB review should be answered in writing by the Member under review by the start of the meeting. Questions posed subsequently should be answered, to the extent possible, before the start of the second session of the meeting. Questions left unanswered at the end of the second session should be answered in writing no later than one month after the meeting with some latitude in the Chair's discretion for Members reviewing a very large number of questions".

Experience, however, shows that the schedule and pace for trade policy reviews adopted at the end of the Uruguay Round is overly ambitious. The requirement to report on the four main trading nations every two years runs the risk of deterioration and routine. The large number of parallel reporting activities required by the four- and six-year schedules run the risk of overburdening the Secretariat and the delegations. In fact, active participation of delegations and interest in following reporting and discussions can be observed only to exist with regard to major markets, while others are essentially left on their own. It is evident that less would be more, and it would be beneficial to extend the time periods to be covered by these trade policy reviews.

It is difficult to assess the effectiveness of the TPRM at the present stage. There are no data available indicating to what extent governments take up, or fail to take up, problems identified by the TPRM and to what extent they respond to naming and shaming in the WTO. While the member under investigation will not openly draw attention to legal inconsistencies and difficulties in trade policy, problems identified often will be internally addressed and offer an opportunity to remedy the situation without being exposed to dispute settlement.⁶³

Outside the WTO, reporting has been most effective in the field of labor rights.⁶⁴ The NAFTA side agreement on labor relations, the North American Agreement on Labor Cooperation (NAALC), is essentially built on reporting and consultation among government departments with a view to triggering mutual advice and educational processes.⁶⁵ Instead of taking up adversarial dispute settlement, a matter is introduced for discussion and the effort made to bring about common progress in educational programs and efforts, including industries affected. The NAALC model shows interesting features that should be further studied in the context of climate change. Unlike dispute settlement, the NAALC model avoids confrontation but reinforces cooperation toward a common goal of realizing essential labor standards in all the countries participating. By 2009, more than 50 trilateral cooperation

programs on labor were being implemented among the Parties. They included conferences, seminars, and technical cooperation and focused on labor relations, occupational safety and health, workplace ethics, and work development.⁶⁶ Judicial dispute resolution (based on the WTO model) is limited to selected areas and includes child labor, minimum wage, and health and safety issues. For other issues, resolution is essentially limited to consultation mechanisms. These entail different stages ranging from public submission to the national offices of labor, consultations, public reporting, ministerial consultation, evaluation in a committee of experts, and discussion at the ministerial level.⁶⁷

Multilevel Governance

In many respects, international economic law forms part of what today is increasingly called multilayered or multilevel governance.⁶⁸ The classical function of international economic law is to contain the nation state. The role of law is to prevent or remedy state failure, for example, discrimination against foreign products that, in the domestic political process, is brought about in response to the pressure of domestic lobbies and interests. International law assumes the function of representing those not sufficiently represented in the political process. In that respect, its role is comparable to that of human rights.

In this philosophy of containment or embedded liberalism, allocation of regulatory powers to appropriate levels is key. Important lessons can be learned from trade and tariff negotiations. Taxation is normally a matter exclusively pertaining to domestic law. It is the epitome of national sovereignty.⁶⁹ Tariffs are the only area in taxation where rates are negotiated internationally. Prior to the GATT and WTO, tariffs were essentially set unilaterally or within bilateral agreements.⁷⁰ The shift to the multilateral level in setting tariff rates in negotiations that are subject to MFN completely changed the political economy of tariff policy. While previously, the matter was of importance to importers and domestic producers only, it became a prime interest to exporters, too, as negotiations equally addressed tariff rates abroad, defining

market access rights. The overall reduction of tariff rates on industrial goods from approximately 40 percent to 4 percent during the past 50 years was possible because of this effect. It would never have happened if tariffs had continued to be defined unilaterally. The example and experience of tariffs can be extrapolated to other regulatory areas, in particular addressing nontariff barriers and services. Common minimal standards are agreed to, taking into account limitations of national sovereignty, because the commitment equally translates into enhanced market access and legal security abroad. These standards lock in levels of liberalization achieved and thus assume a constitutional function. Domestic legislation needs to take these commitments into account and help to prevent outright protectionist policies, often supported by lobbies and majorities, from prevailing. These commitments are necessarily located at the level of international law. They inform, monitor, and control domestic law, although the impact of international law is subject to constitutional law doctrines and greatly varies among countries.

Conclusions

Summary findings

As depicted in this chapter, international economic law essentially deals with market access and conditions of competition on markets. Trade and investment law and policies, labor standards, and monetary issues essentially serve the goals of reducing or eliminating discrimination that favors domestic producers and products in protectionist terms that are detrimental to welfare and economic growth, while respecting legitimate policy goals, such as the protection of the environment. The main interest in engaging in commitments is based on the pursuit of enhanced market access and the establishment of stable and fair conditions of competition for domestic operators, exporters, and investors alike. To achieve these goals, concessions are taken into account at home. Ideally, free trade and the reduction of trade barriers is a matter of self-interest, but it is rarely undertaken without external pressure and the prospect of achieving better conditions for exports



abroad. Thus, international economic law is essentially informed by a mercantilist philosophy of reciprocity.⁷¹ Legally, MFN obligations exclude policies of reciprocity within given commitments and are subject to a number of exceptions. Politically, however, the balance of concessions and commitments is an essential prerequisite to the process of negotiations. Package deals only materialize if such a balance is achieved among the major trading nations.

Experience in international economic law shows that bottom-up processes, consensus building with critical mass, and package deals have been most successful in bringing about new legal disciplines in the field over time. Regimes operating within the constitutional framework of an international organization, leaving space for developments to occur step by step, offer better prospects of coherence than purely bilateral avenues. Dispute settlement mechanisms play an important role in verification and enforcement of rights and obligations. Reporting is often the only means of verification where formal dispute settlement is lacking. These qualities are best developed within the WTO. Ever since the GATT was established in 1947, international trade regulation has been able to pragmatically adjust to new challenges and to develop with a view to liberalizing trade and bringing about more equal conditions of competition for imported goods and services. The structure offers a framework for a long-term process. Whether the system is able to develop successfully in a multipolar world is an open question, and challenges in decision making need to be addressed in the coming years.

Possible lessons

The fundamental constellation of reciprocal and mercantilist economic and trade policies raises the question to what extent lessons can be learned from the field for environmental law and areas subject to the global commons. Climate-change mitigation essentially does not respond to the incentives of reciprocity. Commitments to reduce carbon emissions by one member automatically translate into an advantage to all countries alike. They do not

imply incentives for reciprocal commitments. In practical terms, free riding is abundant.^t

Thus, the question arises to what extent the fundamentals of international economic law can be applied to and translated into environmental law dealing with the global commons. To what extent are policies and rules developed under philosophies of reciprocity suitable for environmental law? To what extent can the experience of international economic law, in particular trade regulation, inspire a future framework for climate change mitigation and adaptation?

In my view, the philosophy of the package deal, critical mass, gradual consensus building in concentric circles, graduation, and open-ended negotiations within a constitutional framework that is subject to dispute settlement and is designed to serve multilevel governance offers the best chances for framing climate change negotiations, given the past record. Static, top-down approaches seeking comprehensive regulation are more difficult to achieve and, where achieved, face problems of implementation and verification. Reporting, naming, and shaming are particularly important to the extent that effective legal dispute resolution cannot be reached at the end of the day. It is a matter of identifying those elements that need to be addressed globally and those that should be left decentralized and open to different modes and avenues of implementation within national or regional governments. The experience of international economic law teaches us to address the problem in terms of multilevel governance, looking at the international, regional, and national system in a comprehensive manner, yet abstaining from seeking unduly centralized top-down solutions.

t. Roberts and Parks argue that diffuse reciprocity to support long-term cooperation with developing countries would aggressively support Southern interests within the international economic regimes, see: Bradley C. Parks and J. Timmons Roberts, *Climate Change, Social Theory and Justice in Theory, Culture and Society* 27:134 (2010).



Whether or not the model of international trade regulation can be applied to climate-change mitigation and adaptation depends on the possibility of linking common goods with particular interests of states. Climate and trade regulation share a common trait in that they each are about producing an important public good. Climate-change mitigation, adaptation, and communication are about securing the long-term viability of this planet, of human welfare, and providing security and stability for future generations. Trade regulation shares some of these traits in providing market access, predictability, and stable legal relations based on international law. The difference is that improving the global climate does not entail specific benefits to countries, and thus incentives beyond climate change need to be created so as to attract commitments and participation in a global system aiming at stabilizing the climate in the coming decades. Therefore, incentives to participate need to be developed that show clear advantages comparable to those of market access, in terms of securing benefits and legal security. Participation in a global system of carbon mitigation therefore should be linked with benefits and advantages for those participating: Such benefits can be found in financial contributions and transfer of technology both in climate-change mitigation and adaptation. The latter, in particular, is of key importance as low carbon-emitting countries are disproportionately affected by climate change and exposed to the need for adaptation in agriculture, habitation, and disaster relief. Importantly, members of the multilateral system will benefit from an agreed abstention from taking unilateral trade measures (carbon tariffs and border tax adjustment) otherwise permissible under WTO law in order to offset carbon leakage as they, in return, pledge to comply with agreed standards of performance and abatement. Trade policy, in the final analysis, offers a powerful incentive to countries to join a multilateral framework addressing carbon-emission reduction and taking concerted measures relating to climate adaptation.

Beyond trade and environment

The philosophy of package deals, however, begs the question whether linkages of climate change mitigation and adaptation



need not be extended beyond related environmental issues, supporting climate change adaptation and trade regulation. Linkages to further policy and regulatory fields should be explored in identifying national interests that will trigger interest in joining a multilateral system addressing carbon reduction and offering support in climate change adaptation. The main concern of all countries alike in addressing international commitments is competitiveness and the impact on social and economic development. These concerns need to be taken into account and translated into ways of addressing issues beyond trade and environment, such as education, migration, competition, and investment. The challenge of climate change is unprecedented, and no field of international law, including trade, offers a sufficiently broad and complex approach based on which the matter can be successfully taken up.

Possible ways forward

The challenge of climate change requires rethinking the functional traditions of international law and organizations. Problems can no longer be solved by working in isolated spheres addressing narrowly defined specific issues in specialized agreements. The challenge of climate change requires a new grand bargain for which a number of key issues need to be institutionally pooled. Climate change mitigation, adaptation, trade, investment, monetary affairs, competition, migration, education, and related human rights may offer a sufficiently broad critical mass to be addressed in a package deal. Climate change needs to be perceived as a global economic problem and thus one of international economic law and policy in a broad sense.

The main challenge, therefore, is how these different areas can be brought together to the extent necessary and then to work with a bottom-up process in international negotiations. It is suggested that it would be best to separate climate change mitigation, adaptation, and communication. While the former entails a relatively small group of countries that are the main emitters, climate change adaptation requires a broader forum as many more countries are affected. Finally, climate change communication is



common to both and needs to be strengthened both in mitigation and adaptation.

Mitigation

Consensus should be built in concentric circles, starting with discussions and negotiations among the main carbon-emitting countries. A grouping comprising the largest emitting economies needs to be formed. It should be asked whether this effort is best undertaken within the G-20, or whether a special initiative should be formed. The group would be called upon to address problems of competition and potential distortions induced by climate-change mitigation policies in domestic law and how this should be addressed in international relations and law. It will require the involvement of heads of state in order to secure appropriate policy coordination among different fields. It is a matter of finding appropriate avenues to reduce carbon emissions without fundamentally affecting established competitive relationships in the world economy. Discussions need to define which principles call for common standards and which elements and instruments should be left decentralized in line with the doctrine of multilevel governance. A mechanism to account for and recognize efforts undertaken in domestic law should be developed, irrespective of international commitments.¹¹ The same is true for commitments made in bilateral agreements. These efforts could eventually be bound and scheduled within the multilateral system in a way comparable to tariff and service commitments in the WTO. A system of credits or bonuses could be developed that countries may invoke in addressing other policy areas where they are in need of third-party commitments. Contributions to the global public good need to be recognized and made more visible.

u. For example, CH₄ emission constraints could be regulated independently of CO₂, see: Marcus C Sarofim, *Climate Policy Design: Interactions among Carbon Dioxide, Methane, and Urban Air Pollution Constraints* (Massachusetts Institute of Technology, Ph. D. Thesis, 2007); C A McAlpine et al., *More than CO₂: a broader paradigm for managing climate change and variability to avoid ecosystem collapse* in *Current Opinion in Environmental Sustainability*, 2, 334-6 (2010).

Adaptation

It should be recognized that the problems arising under climate change adaptation are of a different nature. They primarily affect developing countries, while mitigation is a matter facing industrialized and emerging economies. Adaptation essentially entails measures of structural adjustment, agricultural and water policies, relief, and migration. Adaptation measures entail addressing food shortages and the pricing of commodities. Such measures should be taken up in parallel, and linkages with climate-change mitigation should be made only at a later stage. Thresholds relating to carbon emission need to be developed by which future support for climate-change adaptation will be linked and made conditional upon participation in an international system committed to carbon reduction. Countries below the standard should be entitled to assistance in climate-change adaptation. Countries beyond the threshold should be supported, provided they join the global system to abate future carbon emissions.

Communication

Finally, it is important to develop strategies of climate-change communication. Properly informing the public about the challenges ahead is a prerequisite to generating sufficient domestic support and acceptance of climate-change mitigation and adaptation measures. Thus, human rights concerns go beyond the right to food and shelter and also need to include freedom of information and of expression in countries around the world. Dissemination of educational programs and support in schooling with a view to informing and educating the public will create the necessary conditions to bring long-term voluntary contributions to the global climate as a public good of humankind.



CHAPTER 3 GLOSSARY

Accession to the WTO: The act of becoming a member of the WTO; signing on to its agreements. New members have to negotiate terms, both bilaterally with individual WTO members and multilaterally, so as to convert the results of the bilateral negotiations in such a way that they apply to all WTO members, and implement domestic legislation and institutional reforms that are needed to meet WTO obligations. Negotiations are limited to ensuring that the acceding member can meet its membership obligations.

Ad valorem tariff: A tariff rate charged as percentage of the price or value of the goods to be exported or imported.

Bilateral agreement: An agreement between two countries setting out the conditions under which trade between them will be conducted. See also, Bilateralism.

Bilateral Investment Treaties (BITS): A name given by many countries to their investment promotion and protection agreements. See also, Bilateralism.

Bilateralism: A preference for conducting trade negotiations mainly through bilateral trade negotiations. Bilateralism assumes that results are more easily obtained if only two parties are involved, partly because economic and political pressure would be less diluted.

Bound tariff: A tariff that a WTO member undertakes not to exceed. See also, Tariff binding.

Concessions: The lowering of or removal of tariffs generally at the request of another WTO member. See also, Schedule of concessions.

Consensus: The usual method for making decisions in the WTO. It is provided for in Article IX of the Marrakesh Agreement Establishing the World Trade Organization as a practice adopted from GATT 1947. Consensus is reached if no member present at the meeting when the decision is being made formally objects to the proposed decision.

Customs union: An area consisting of two or more individual economies or customs territories that remove all tariffs or apply a common tariff between or among themselves (for example, the European Union).

Developed countries: Usually applied to the OECD member states, conveying economically and socially advanced countries. Sometimes developed countries are collectively referred to as the North because most of them are located in the northern hemisphere.

Developing countries: An imprecise term based as much on economic and social foundations as on political perceptions and aspirations. Developing-country status is mainly self-declared; no objective standards exist for it, compared to the developed and least developed countries.

Doha Agenda: the sum of issues arising from the Doha Ministerial Conference in November 2001. Development issues are dominant in the agenda, and developed countries have also committed themselves to assist developing countries in capacity-building initiatives.

Doha Development Round: Also the Doha Ministerial Conference; the WTO ministerial Conference held in Doha, Qatar from 9 to 13 November 2001. It resulted in a new round of multilateral trade negotiations. It is referred to as the Development Agenda because development and capacity-building issues are predominant in the negotiations.

Enabling clause: One of the outcomes of the Tokyo Round of negotiations, this clause allows developed WTO members to take action favoring developing countries without according the same treatment to other members. See also Tokyo Round. Everything But Arms: A European Union initiative for duty-free and quota-free access to all products except arms originating from least developed countries. It took effect as of March 5, 2001, for all products including sensitive ones like sugar, rice, and bananas.

FAO: U.N. Food and Agriculture Organization, established in 1945 as a specialized U.N. organization aimed at ensuring food security and raising levels of nutrition and standards of living for member states.

FDI: Foreign direct investment, as defined by the IMF, is the direct investment that is made to acquire a lasting interest in an enterprise operating in an economy other than that of the investor, the investor's purpose being to have an effective voice in the enterprise's management.

Free riding: A casual term used to imply that a country that does not make any trade concessions profits nonetheless from tariff cuts and other concessions made by other countries under the MFN principle.

Free trade zone: Also known as free trade area. Trade within the group is duty free but members set their own tariffs on imports from non-members (for example, NAFTA, which includes the United States, Canada, and Mexico). The zones are defined areas called export processing zones normally near transportation nodal points and designated by governments for duty-free import of raw materials or manufacturing components intended for further processing or final assembly and their re-export afterward.

G-7: The group of seven leading industrial countries: Canada, France, Germany, Italy, Japan, the United Kingdom, and the United States.

G-8: G-7 plus Russia.

G-10: G-7 plus Belgium, Netherlands, Sweden, and Switzerland.

G-20: The Group of 20 (G-20) finance ministers and central bank governors, established in 1999 to bring together systemically important industrialized and developing economies to discuss key issues in the global economy. The G-20 promotes open and constructive discussion among industrial and emerging-market countries on key issues related to global economic stability. Members include Argentina, Australia, Brazil, Canada, China, the European Union, France, Germany, India, Indonesia, Italy, Japan, Mexico, Russia, Saudi Arabia, South Africa, the Republic of Korea, Turkey, the United Kingdom, and the United States.

GATS Agreement: The WTO's General Agreement on Trade in Services.

GATT disciplines: Rules provided for under the General Agreement on Tariffs and Trade governing trade in goods by member countries. GATT has been superseded as an international organization by the WTO. An updated general agreement is now the WTO Agreement Governing Trade in Goods. GATT 1947, the official legal term for the old (pre-1994) version of the GATT; GATT 1994, the official legal term for the new version of the general agreement, incorporated into the WTO, and including GATT 1947. The two main principles in the GATT are those of national treatment and MFN treatment—collectively referred to as the principle of nondiscrimination.

Generalized System of Preferences (GSP): Programs by developed countries granting preferential tariffs to imports from developing countries.

Graduation: Removal of tariff preferences accorded to developing countries under the GSP because a country has exceeded a certain level of per capita GDP. The doctrine of graduation, instead, calls for introducing differential treatment of developing countries on the basis of economic indicators within a given agreement, allowing countries to phase in rights and obligations.

ILO: International Labour Organization

Kennedy Round: The sixth round of the GATT negotiations held from 1963 to 1967.

Least Developed Countries (LDCs): Group of countries designated as such on the basis of per capita GNP, life expectancy at birth, per capita calorie supplies, combined primary and secondary education enrollment ratios, adult literacy rates, share of manufacturing GDP, share of employment in industry, per capita electricity consumption, and export concentration ratio.

Market access: The extent to which a good or service can compete with locally made products in another market.

Members: WTO governments (first letter capitalized, in official WTO style).

Most-favored nation treatment (MFN): The principle of not discriminating between one's trading partners. Provided for under GATT Article I, GATS Article II and TRIPS Article 4).

Multilateralism: An approach to the conduct of international trade based on cooperation, equal rights and obligations, nondiscrimination, and the participation as equals of many countries regardless of their size or shares of international trade.

NAALC: North American Agreement on Labor Cooperation.

NAFTA: North America Free Trade Agreement; Members include the United States, Canada, and Mexico. See also, Free trade area.

National treatment (NT): The principle of giving others the same treatment as one's own nationals.

Nontariff measures: Measures not involving tariff rates, such as quotas, import licensing systems, sanitary regulations, prohibitions, etc. Same as nontariff barriers.

Non-violation: A situation where a party to a multilateral trade agreement under the WTO acts according to the legal provisions of the agreement but still manages to nullify and impair the rights of another party through its actions.

Nullification and impairment: Damage to a country's benefits and expectations from its WTO membership through another country's change in its trade regime or failure to carry out its WTO obligations.

OECD: Organisation for Economic Co-operation and Development. Sometimes referred to as the rich-country club.

Package deal: See also single undertaking.

Preferential trade arrangements: Arrangements under which a party agrees, either unilaterally or as a result of negotiations, with one or more other parties to grant preferential treatment in trade in goods or services. The rules for establishing such arrangements are subject to reasonably precise WTO rules although developing countries have more flexibility.

Protectionism: A climate of economic policy formulation that sees merit in preventing the exposure of domestic producers to the rigors of the international market.

Protocol of Accession: The instrument that sets out terms and conditions by which a country becomes a member of the WTO. Also called Protocol and Accession.

Protocol: A treaty drafted to supplement another treaty and sharing the same legally binding quality. A protocol must be consistent with its parent treaty.

Protocols: Additional agreements attached to the GATS. The Second Protocol deals with the 1995 commitments on financial services. The Third Protocol deals with movement of natural persons. The Fourth Protocol deals with telecommunications, and the Fifth Protocol deals with financial services.

Quantitative Restrictions (QRs): Specific limits on the quantity or value of goods that can be imported (or exported) during a specific time period.

Reciprocity: The practice in the WTO by which governments extend similar concessions to each other. See also, concessions.

Schedule of concessions/commitments: List of bound tariff rates negotiated under the WTO setting out the terms, conditions, and qualifications under which goods may be imported. See also, concessions.

Services commitments: Commitments or concessions made in key economic activities such as telecommunications, banking, insurance, land and water transportation, entertainment, aviation, and education.

Single undertaking: A guiding principle in the framework of multilateral trade negotiations. It refers to the requirement that WTO members must join all the agreements administered by it.

Special and differential treatment (S&D, SDT): Special treatment given to developing countries in WTO agreements. Such treatment can include being granted longer periods to phase in obligations and more lenient obligations.

Tariff binding: A commitment not to increase a rate of duty beyond an agreed level. Once a rate of duty is bound, it may not be raised without compensating the affected parties.

Tariff lines: A product as defined in lists of tariff rates. Products can be subdivided, the level of detail reflected in the number of digits in the harmonized system code used to identify the product.

Tariffication: Procedures relating to the agricultural market-access provision in which all nontariff measures are converted into tariffs.

Tariffs: Customs duties on merchandise imports. Levied either on an ad valorem basis (percentage of value) or on a specific basis (e.g. US\$7 per 100 kg). Tariffs give price advantage to similar locally produced goods and raise revenues for the government.

Tokyo Round: The seventh round of GATT negotiations, which took place between 1973 and 1979.

Trade Policy Review Body (TPRB): The general council operating under special procedures for meetings to review trade policies and practices of individual WTO members under the TPRM.

Trade Policy Review Mechanism (TPRM): A mechanism for review of WTO members' trade policies and practices. The mechanism was established in 1988 and was aimed at the smoother functioning of the multilateral trading system. See also, Trade Policy Review Body.

TRIPS agreement: The Agreement on Trade-Related Aspects of Intellectual Property Rights.

UNCTAD: United Nations Conference on Trade and Development.

Unilateral action: See Unilateralism.

Unilateralism: The action of lowering tariffs or removing other impediments to trade unilaterally without the expectation of reciprocal action by others.

Uruguay Round: Multilateral trade negotiations launched at Punta del Este, Uruguay, in September 1986, concluded in Geneva in December 1993, and signed by ministers in Marrakesh, Morocco, in April 1994.

WIPO: World Intellectual Property Organization. The main intergovernmental organization responsible for the protection of intellectual property rights within its member states.

WTO Ministerial Conference: A conference composed of the representatives of all WTO members at the ministerial level. The conference meets at least once every two years and has the authority to make decisions on all matters under WTO jurisdiction.

WTO: World Trade Organization. Established in 1995, successor to the GATT 1947. The intergovernmental organization responsible for international relations trade among its members.

Zeroing: An investigating authority usually calculates the dumping margin by finding the average of the differences between the export prices and the home market prices of the product in question. When it chooses to disregard or put a value of zero on instances when the export price is higher than the home market price, the practice is called zeroing. Critics claim that this practice artificially inflates dumping margins.

CHAPTER 3 REFERENCES AND LIST OF CASES

Addo, Kofi. *Core Labour Standards and International Trade: Lessons to be Learnt from the Regional Context*, Ph.D., University of Bern, 2010 (publication forthcoming).

Agreement Establishing the World Trade Organization. 2011. Available at http://www.wto.org/english/docs_e/legal_e/04-wto.pdf (accessed 28 February 2011).

Baltensperger, E., and T. Cottier. 2010. "The Role of International Law in Monetary Affairs." *Journal of International Economic Law* 13(3): pp. 911-937.

Barfield, C. E. 2001. *Free Trade, Sovereignty, Democracy: The Future of the World Trade Organization*. Washington, DC: AEI Press.

Biermann, F., and K. Dingwerth. 2004. "Global Environmental Change and the Nation State." *Global Environmental Politics* 4(1): pp. 1-22.

Boyd, W. 2010. "Climate Change, Fragmentation, and the Challenges of Global Environmental Law: Elements of a Post-Copenhagen Assemblage." *University of Pennsylvania Journal of International Law* 32: p. 457.

Breen, M. J. 1993. "Agriculture," in *The GATT Uruguay Round. A Negotiating History (1986-1992) Volume I*. T. P. Stewart, J. Stewart, D. Stewart eds., : Leiden: Wolters Kluwer Law and Business, pp. 125-255.

Chaisse, J., and C. Debashis. 2007. "Implementing WTO Rules through Negotiations and Sanction: The Role of Trade Policy Review Mechanism and Dispute Settlement System" *Pennsylvania Journal of International Economic Law* 28:1, pp. 153-185.

Constitution of the Food and Agriculture Organization of the United Nations: Available at <http://www.fao.org/docrep/x5584e/x5584e0i.htm> (accessed 28 February 2011).

Constitution of the International Labour Organization: Available at <http://www.ilo.org/ilolex/english/iloconst.htm> (accessed 28 February 2011).

Convention establishing the World Intellectual Property Organization: Available at http://www.wipo.int/treaties/en/convention/trtdocs_wo029.html (accessed 28 February 2011).

Cottier, T. 1996. "The Challenge of Regionalization and Preferential Relations in World Trade Law and Policy," *European Foreign Affairs Review*, Kluwer Law International, Vol. 2: pp. 149-167..

Cottier, T. 2005. "The Agreement on Trade-Related Aspects of Intellectual Property Rights," in *The World Trade Organization: Legal Economic and Political Analysis*. F. J. P. Macroy, E. A. Appleton, and M. Plummer, eds. Vol. I, New York: Springer pp. 1041-1120.

Cottier, T., 2006. "From Progressive Liberalization to Progressive Regulation", *Journal of International Economic Law* 9(4): pp. 779-821.

Cottier, T. 2006a. "DSU reform: Resolving Underlying Balance-of-Power Issues," in *The WTO at Ten; The Contribution of the Dispute Settlement System / G. Sacerdoti, A. Yanovich, and J. Bohanes*, eds. Cambridge: Cambridge University Press, pp. 259-265.

Cottier, T. 2007. *The Challenge of WTO Law: Collected Essays*, London: Cameron.

Cottier, T. 2009. "Preparing for Structural Reform in the WTO." *Journal of International Economic Law* 10(3): pp.497-508.

Cottier T., and O. Matthias. 2005. *International Trade Regulation: Law and Policy in the WTO, the European Union and Switzerland*. London and Bern: Cameron May and Staempfli Publishers.

Cottier, T., and S. Takenoshita. 2003. "The Balance of Power in WTO Decision-Making: Towards Weighted Voting in Legislative Response," in *Aussenwirtschaft*, 58 (2) pp. 171-214; reprinted in: Matsushita M and Dukgeun, A. (editors.), *WTO and East Asia, New Perspectives*, London 2004 pp. 51-89.

Cottier, T., and T. Satoko. 2008. "Decision-making and the Balance of Powers in WTO Negotiations: Towards Supplementary Weighted Voting," in *At the Crossroads: The World Trading System and the Doha Round*. Griller Stefan, ed. Vienna: Springer pp. 181-229.

Database of International Labor Standards: Available at <http://www.ilo.org/ilolex/english/convdisp1.htm> (accessed 28 February 2011).

Davey, W. J. 2005. "The WTO Dispute Settlement System: The First Ten years." *Journal of International Economic Law* 8: pp. 17–50.

Doha Development Agenda: Negotiations, implementation and development: Available at http://www.wto.org/english/tratop_e/dda_e/dda_e.htm (accessed 28 February 2011).

Dolzer, R., and Schreuer C. 2008. *Principles of International Law*. New York: Oxford University Press, 2008.

Ehlermann, C-D., and E. Lothar. 2005. "Are WTO Decision-Making Procedures Adequate for Making, Revising, and Implementing Worldwide and 'Plurilateral' Rules?" in *Reforming the World Trading System. Legitimacy, Efficiency, and Democratic Governance*. E-U. Petersmann, ed., Oxford: Oxford University Press, pp. 496-522.

Eichengreen, B., and F. Marc. eds. 1997. *The Gold Standard in Theory and History*, 2nd edition. London: Routledge.

Emmert, F., ed. 2011. *European Union Law*. Utrecht: Eleven International Publishing 2nd ed.

Footer, E. M. 2006. *An Institutional and Normative Analysis of the World Trade Organization*. Dordrecht: Martinus Nijhoff Publishers.

G-20, Leader's Statement: The Pittsburgh Summit, September 2009, available at: http://www.g20.org/Documents/pittsburgh_summit_leaders_statement_250909.pdf.

Goode, W. 2003. *Dictionary of Trade Policy Terms*, Fourth Edition. Cambridge: Cambridge University Press.

Goode, W. 2007. *Dictionary of Trade Policy Terms*, Fifth Edition. Cambridge: Cambridge University Press.

Hajnal, I. P. 2001. *The G7/G8 System: Evolution, Role and Documentation* with a Contribution by Sian Meikle. Farnham: Aldershot/Ashgate.

Hajnal I. P. 2007. *The G8 System and the G20: Evolution, Role and Documentation*. Farnham: Aldershot/Ashgate.

Hoda, A. 2001. *Tariff Negotiations and Renegotiations under the GATT and the WTO*. Cambridge: Cambridge University Press.

Howse, R. 2005. "WTO Governance and the Doha Round," *Global Economy Journal* 5(4): Article 16. RePEc:bpj:glecon:v:5:y:2005:i:4:n:16 (last visited April 12, 2012)

Hufbauer, G. C and J. J. Schott. 2005. *NAFTA Revisited: Achievements and Challenges*. Washington, DC: The Institute for International Economics.

Hughes, S. and H. Nigel. 2011. *The International Labour Organisation (ILO): Coming in from the Cold*. New York: Routledge.

Iran-United States Claims Tribunal: Available <http://www.iusct.org/> (accessed 27 February 2011).

Jackson H. J. 2006. *Sovereignty, the WTO, and Changing Fundamentals of International Law*. Cambridge,: Cambridge University Press.

Joerges, C. and E-U. Petersmann Ernst-Ulrich. 2006. *Constitutionalism, Multilevel Trade Governance and Social Regulation*. Oxford: Hart Publishing.

Jones, K. 2010. *The Doha Blues. Institutional Crisis and Reform in the WTO*. City, Oxford: Oxford University Press.

Keck, A., Low P. (2004), "Special and Differential Treatment in the WTO: Why, When and How?", Staff Working Papers ERSD-2004-03.

Key J. S. 2005. "Financial Services," in *The World Trade Organization: Legal Economic and Political Analysis*, Vol. 1. F. J. P. Macrory F.J. Patrick, E. A. Appleton, and M. Plummer, eds. New York: Springer, pp. 955-988.

Lastra M. R. 2006. *Legal Foundations of International Monetary Stability*. Oxford: Oxford University Press.

Leech D. and R. Leech . 2004. "Voting Power in the Bretton Woods Institutions," CSGR Working Paper No 154/04, University of Warwick and Birkbeck, London University.

Lester, S., and M. Bryan, eds. 2009. *Bilateral and Regional Trade Agreements: Commentary and Analysis*. Cambridge, UK: Cambridge University Press.

Lowenfeld F. A. 2008. *International Economic Law*, 2nd Edition. Oxford: Oxford University Press.

Lowenfeld F. A. 2010. "The International Monetary System: A Look Back over Seven Decades," *Journal of International Economic Law* 13(3): pp. 575-595.

MacMillan, E. 2010. "Doha Decision-Making: Implications of the Consensus and Single Undertaking Principles for Developing Countries," *Commonwealth*, Issue paper 71.

Marshall, K. 2008. *The World Bank: From Reconstruction to Development to Equity*. Abingdon: Routledge.

McAlpine, C.A., Ryan, J.G., Seabrook, L., Thomas, S., Dargusch, P.J., Syktus, J.I., Pielke Sr, R.A., Etter, A.E., Fearnside, P.M, and Laurance, W.F., 2010. More than CO₂: A broader paradigm for managing climate change and variability to avoid ecosystem collapse. *Current Opinion in Environmental Sustainability* 2: pp. 334-346.

North American Free Trade Agreement (NAFTA), Dispute Settlement: Available at <http://www.nafta-sec-alena.org/en/view.aspx?x=225> (accessed 27 February 2011).
OECD (2011): OECD Enlargement, available at http://www.oecd.org/document/42/0,3746,en_2649_201185_38598698_1_1_1_1,00.html.

Pagani, P. 2002. *Peer Review: A Tool for Cooperation and Change: An Analysis of an OECD Working Method*, OECD: General Secretariat, Directorate for Legal Affairs, SG/LEG (2002)1.

Parks C. B., and R. J. Timmons. 2010. "Climate Change, Social Theory and Justice." *Theory, Culture and Society* 27:134.

Pohlmann, C., Reichert St., Schlesinger H.R. eds. 2010. *The G-20: A "Global Economic Government" in the Making?* Berlin: Friedrich-Ebert-Stiftung.

Reinalda, B. *Decision Making within International Organizations. An Overview of Approaches and Case Studies*, 2001, available at: <http://www.essex.ac.uk/ecpr/events/jointsessions/paperarchive/grenoble/ws12/reinalda.pdf>.

Samans, R., U. Marc, and L-C. Augusto. 2007. *The International Monetary System, The IMF, and the G-20: A Great Transformation in the Making?* Basingstoke: Palgrave Macmillan.

Sarofim C. M. 2007. *Climate Policy Design: Interactions among Carbon Dioxide, Methane, and Urban Air Pollution Constraints*, Ph. D. Thesis, Massachusetts Institute of Technology.

Steger P. D. 2009. "The Future of the WTO: The Case for Institutional Reform." *Journal of International Economic Law* 12: pp. 803-833.

Tijmes-Lhl, J. 2009. "Consensus and Majority Voting in the WTO," *World Trade Review* 8(3)" pp. 417-437.

UNCTAD 2010, *UNCTAD World Investment Report 2010: Investing in a Low-Carbon Economy* New York and Geneva, http://www.unctad.org/en/docs/wir2010_en.pdf
USTR. "NAFTA at Eight" and "NAFTA at Ten." Available at www.ustr.gov.

Williams, P. J. 2008. *A Handbook on Accession to the WTO*. Cambridge: WTO Secretariat.

World Intellectual Property Organization (WIPO), Administered Treaties: Available at <http://www.wipo.int/treaties/en/> (accessed 28 February 2011).

World Trade Organization. WT/TPR/6/Rev.2: Rules of Procedure for Meetings of the Trade Policy Review Body.

World Trade Organization Glossary online: Available at http://www.wto.org/english/thewto_e/glossary_e/glossary_e.htm.

World Trade Organization, Legal Texts: Available at http://www.wto.org/english/docs_e/legal_e/final_e.htm (accessed 28 February 2011).

World Trade Organization “Understanding on Rules and Procedures Governing the Settlement of Disputes.” Available at http://www.wto.org/english/tratop_e/dispu_e/dsu_e.htm (accessed 27 February 2011).

World Trade Organization, Members and Observers 2011: Available at http://www.wto.org/english/thewto_e/whatis_e/tif_e/org6_e.htm.

World Trade Organization Secretariat, Guide to GATS: An Overview of Issues for Further Liberalization of Trade in Service, 2001.

Yaotian, W., and G. Wang. 2005. “China,” in *The World Trade Organization: Legal, Economic and Political Analysis Vol. III*, P. F. J. Macrary, A. E. Appleton, and M. G. Plummer, eds. New York: Springer, pp. 47-71.

List of cases

ICJ, Case Concerning the Barcelona Traction, Light and Power Company, Limited (Belgium v. Spain) New Application 1962, available at <http://www.icj-cij.org/docket/index.php?p1=3&p2=3&code=bt2&case=50&k=1a> (accessed 27 February 2011).

ICJ, Case Concerning, Elettronica Sicula, SpA (ELSI), (United States of America v. Italy), available at <http://www.icj-cij.org/docket/index.php?p1=3&p2=3&code=elsi&case=76&k=d8> (accessed 27 February 2011).

WT/DS108/R, 8 October 1999: United States—Tax Treatments for “Foreign Sale Corporations”, Panel, available at <http://www.worldtradelaw.net/> (accessed 4 March 2011).

WT/DS2/AB/R, 29 April 1996: United States—Standards for Reformulated and Conventional Gasoline (“Reformulated Gasoline”), Appellate Body, available at <http://www.worldtradelaw.net/> (accessed 4 March 2011).

WT/DS26/AB/R-WS/DS48/AB/R, 16 January 1998: Measures Concerning Meat and Meat Products (“Hormones”), Appellate Body, available at <http://www.worldtradelaw.net/> (accessed 4 March 2011).

WT/DS291/R-WT/DS292/R-WT/DS293/R, 29 September 2006: European Communities—Measures Affecting the Approval and Marketing of Biotech Products (“GMO’s”), Panel, available at <http://www.worldtradelaw.net/> (accessed 4 March 2011).

WT/DS363/R; §7.281: China—Measures Affecting Trading Rights and Distribution Services for Certain Publications and Audiovisual Entertainment Products.

WTO, WT/DS/294/AB/R, 18 April 2006: United States, Laws, Regulations and Methodology for Calculating Dumping Margins, (“Zeroing”), Appellate Body, available at <http://www.worldtradelaw.net/> (accessed 4 March 2011); WTO, WT/DS322/AB/R, 9 January 2007, United States—Measures Relating to Zeroing and Sunset Reviews, Appellate Body, available at <http://www.worldtradelaw.net/> (accessed 4 March 2011).

WTO, WT/DS/58/AB/R, 12 October 1998: United States—Import Prohibition of Certain Shrimp and Shrimp Products, Appellate Body, available at <http://www.worldtradelaw.net/> (accessed 4 March 2011).



CHAPTER 3 ENDNOTES

1. William Boyd, "Climate Change, Fragmentation, and the Challenges of Global Environmental Law: Elements of a Post-Copenhagen Assemblage." *University of Pennsylvania Journal of International Law* 32: 457 (2010) (offering a partial reconceptualization of the nature and possibilities of global climate governance in the post-Copenhagen era); Frank Biermann and Klaus Dingwerth. 2004. "Global Environmental Change and the Nation State." *Global Environmental Policy* 1(4): pp. 1-22 (detailing how global environmental change challenges the traditional Westphalian system by undermining the idea of sovereignty).
2. See generally Thomas Cottier and Matthias Oesch, *International Trade Regulation: Law and Policy in the WTO, the European Union and Switzerland* (London and Bern: Cameron May and Staempfli, 2005).
3. Peter I. Hajnal, *The G-8 System and the G-20: Evolution, Role, and Documentation* (Farnham: Aldershot/Ashgate, 2007); Peter I. Hajnal, *The G-7/G-8 System: Evolution, Role, and Documentation with a Contribution by Sian Meikle* (Farnham: Aldershot/Ashgate, 2001).
4. Richard Samans, Marc Uzan, and Augusto Lopez-Claros, *The International Monetary System, the IMF, and the G-20: A Great Transformation in the Making?* Basingstoke: Palgrave Macmillan, 2007).
5. Christoph Pohlmann, Stephan Reichert, Hubert René Schlesinger eds. *The G-20: A "Global Economic Government" in the Making?* Berlin: Friedrich-Ebert-Stiftung 2010...
6. Frank Emmert, ed. *European Union Law* (Utrecht, Eleven International Publishing), 2nd ed. 2010.
7. Debra P. Steger, "The Future of the WTO: The Case for Institutional Reform." *Journal of International Economic Law* 12: 803 (2009).
8. Andreas F. Lowenfeld, *International Economic Law*, 2nd Edition (Oxford: Oxford University Press, 2008), pp. 610–622, 644 et seq.
9. Barry Eichengreen and Marc Flandreau, eds., *The Gold Standard in Theory and History*, 2nd ed. (London: Routledge, 1997) Andreas F. Lowenfeld, "The International Monetary System: A Look Back over Seven Decades." *Journal of International Economic Law* 13(3): 575–597 (2010).
10. Ernst Baltensperger and Thomas Cottier. "The Role of International Law in Monetary Affairs." *Journal of International Economic Law* 13(3): 911–939 (2010).
11. G-20, Leader's Statement. The Pittsburgh Summit, September 2009, available at: http://www.g20.org/Documents/pittsburgh_summit_leaders_statement_250909.pdf
12. See, for general overview, Katherine Marshall, *The World Bank. From Reconstruction to Development to Equity* (London: Routledge, 2008).
13. For an overview of the latest figures characterizing the decentralized landscape of international investment rules, see UNCTAD, *UNCTAD World Investment Report 2010: Investing in a Low-Carbon Economy* (New York and Geneva: UNCTAD, 2010), 81ff, http://www.unctad.org/en/docs/wir2010_en.pdf.

14. Among a significant body of relevant literature, the monograph by Rudolf Dolzer and Christoph Schreuer may provide a good overview. See Rudolf Dolzer and Christoph Schreuer, *Principles of International Investment Law* (New York: Oxford University Press, 2008).
15. Among a significant body of relevant literature, the recent handbook by Simon Lester and Bryan Mercurio may give insights on various aspects of the topic. See Simon Lester and Bryan Mercurio, eds., *Bilateral and Regional Trade Agreements: Commentary and Analysis* (Cambridge: Cambridge University Press, 2009).
16. The Office of the United States Trade Representative (USTR) gives timely updates on the progress of the TPP negotiations. See the web page of the USTR, at: <http://www.ustr.gov/tpa>.
17. For insights into the WTO-related aspects of preferential trade agreements, the WTO Regional Trade Agreements Gateway provides relevant information, see: http://www.wto.org/english/tratop_e/region_e/region_e.htm.
18. Constitution of the International Labour Organization (ILO), available at <http://www.ilo.org/ilolex/english/iloconst.htm> (accessed 28 February 2011).
19. Convention establishing the World Intellectual Property Organization, available at http://www.wipo.int/treaties/en/convention/trtdocs_wo029.html (accessed 28 February 2011).
20. Constitution of the Food and Agriculture Organization of the United Nations, available at <http://www.fao.org/docrep/x5584e/x5584e0i.htm> (accessed 28 February 2011).
21. Agreement Establishing the World Trade Organization, available at http://www.wto.org/english/docs_e/legal_e/04-wto.pdf (accessed 28 February 2011).
22. Available at <http://www.ilo.org/ilolex/english/convdisp1.htm> (accessed 28 February 2011).
23. Available at http://www.wto.org/english/docs_e/legal_e/final_e.htm (accessed 28 February 2011).
24. See <http://www.wipo.int/treaties/en/> (accessed 28 February 2011).
25. Thomas Cottier and Matthias Oesch, *International Trade Regulation: Law and Policy in the WTO, the European Union and Switzerland*, (London and Bern: Cameron May & Staempfli Publishers, 2005), p. 74.
26. For a detailed study of each of the rounds, see Anwarul Hoda, *Tariff Negotiations and Renegotiations under the GATT and the WTO*, (Cambridge: Cambridge University Press, 2001), pp. 25–78.
27. WTO Secretariat, “Guide to GATS: An Overview of Issues for Further Liberalization of Trade in Services,” 2001.
28. Sydney J. Key. “Financial Services,” in *The World Trade Organization: Legal Economic and Political Analysis*, vol. I. Patrick F. J. Macrory, Arthur E. Appleton, and Michael Plummer, eds., (New York: Springer, 2005) pp. 955, 960–961.
29. Thomas Cottier. “The TRIPS Agreement,” in *The World Trade Organization: Legal Economic and Political Analysis*. Patrick F. J. Macrory, Arthur E. Appleton, and Michael Plummer, eds. (New York: Springer, 2005), pp. 1041–1120.
30. See, generally, Thomas Cottier and Matthias Oesch, *International Trade Regula-*



- tion: Law and Policy in the WTO, the European Union and Switzerland* (London and Bern: Cameron May and Staempfli Publishers, 2005), pp. 72–77, and *passim*.
31. Robert Howse. “WTO Governance and the Doha Round.” *Global Economy Journal* 5(4): Article 16; Thomas Cottier. 2009. “Preparing for Structural Reform in the WTO.” *Journal of International Economic Law* 10(3): 497–50 (2005).
 32. See http://www.wto.org/english/tratop_e/dda_e/dda_e.htm (accessed 28 February 2011).
 33. WTO (2011), Members and Observers, available at http://www.wto.org/english/thewto_e/whatis_e/tif_e/org6_e.htm.
 34. Yaotian Wang and Guiquo Wang.. “China” in *The World Trade Organization: Legal, Economic and Political Analysis Vol. III*. P. F. J. Macrory, A.E. Appleton, and M. G. Plummer, eds. (New York: Springer 2005), pp. 47-71.
 35. Bob Reinalda, *Decision Making within International Organizations. An Overview of Approaches and Case Studies*, 2001, available at: <http://www.essex.ac.uk/ecpr/events/jointsessions/paperarchive/grenoble/ws12/reinalda.pdf>.
 36. See Dennis Leech and Robert Leech. 2008. “Voting Power in the Bretton Woods Institutions.” CSGR Working Paper No 154/04, November 2004, University of Warwick and Birkbeck, London University; Katherine Marshall, *The World Bank. From Reconstruction to Development to Equity* (London: Routledge, 2008),.
 37. Thomas Cottier and Satoko Takenoshita, “Decision-Making and the Balance of Powers in WTO Negotiations: Towards Supplementary Weighted Voting,” in *At the Crossroads: The World Trading System and the Doha Round*. Stefan Grillier, ed. (New York: Springer, 2008), pp. 181–229.
 38. Claus-Dieter Ehlermann and Lothar Ehring, “Are WTO Decision-Making Procedures Adequate for Making, Revising, and Implementing Worldwide and ‘Plurilateral’ Rules?” in *Reforming the World Trading System. Legitimacy, Efficiency, and Democratic Governance*. Ernst-Ulrich Petersmann, ed. (Oxford, Oxford University Press, 2005), pp. 500–515.
 39. On consensus in the WTO, see further: Mary E. Footer, *An Institutional and Normative Analysis of the World Trade Organization* (Dordrecht: Martinus Nijhoff, 2006); Jaime Tijmes-Lhl. “Consensus and Majority Voting in the WTO.” *World Trade Review* 8(3): 417–437 (2009).
 40. On negotiations of the Agreement on Agriculture, see: John M. Breen, Agriculture in *The GATT Uruguay Round. A Negotiating History (1986–1992), Volume I*. Terence P. Stewart, et al. eds. (Leiden: Wolter Kluwer Law 1993), pp. 125–255.
 41. On negotiations of the TRIPS Agreement, see Thomas Cottier, “The Agreement on Trade-Related Aspects of Intellectual Property Rights,” in *The World Trade Organization: Legal Economic and Political Analysis*. F. J. P. Macroy, E. A. Appleton, and M. Plummer, eds. Vol. I, (New York Springer 2005) pp. 1055-1056. .
 42. Kent Jones, *The Doha Blues. Institutional Crisis and Reform in the WTO* (Oxford University Press, 2010): Euan MacMillan, “Doha Decision-Making: Implications of the Consensus and Single Undertaking Principles for Developing Countries,” *Commonwealth*, Issue 71, (2010).



43. See in detail the proposals for reforms of the WTO decision-making process: Thomas Cottier and Satoko Takenoshita, "Decision-making and the Balance of Powers in WTO Negotiations: Towards Supplementary Weighted Voting," in *At the Crossroads: The World Trading System and the Doha Round*. Stefan Grillier, ed. (New York: Springer, 2008), pp. 181–229.
44. See <http://www.iusct.org/> (accessed 27 February 2011).
45. See <http://www.nafta-sec-alena.org/en/view.aspx?x=225> (accessed 27 February 2011).
46. ICJ, Case Concerning the Barcelona Traction, Light and Power Company, Limited (Belgium v. Spain) New Application 1962, available at <http://www.icj-cij.org/docket/index.php?p1=3&p2=3&code=bt2&case=50&k=1a> (accessed 27 February 2011).
47. ICJ, Case Concerning, Elettronica Sicula, SpA (ELSI), (United States of America v. Italy), available at <http://www.icj-cij.org/docket/index.php?p1=3&p2=3&code=elsi&case=76&k=d8> (accessed 27 February 2011)
48. Available at http://www.wto.org/english/tratop_e/dispu_e/dsu_e.htm (accessed 27 February 2011)
49. William J. Davey. 2005. "The WTO Dispute Settlement System: The First Ten Years." *Journal of International Economic Law* 8: 17–50 .
50. See WTO, WT/DS26/AB/R-WS/DS48/AB/R, 16 January 1998, Measures Concerning Meat and Meat Products ("Hormones"), Appellate Body, available at <http://www.worldtradelaw.net/> (accessed 4 March 2011).
51. See WTO, WT/DS291/R-WT/DS292/R-WT/DS293/R, 29 September 2006, European Communities—Measures Affecting the Approval and Marketing of Biotech Products ("GMOs"), Panel, available at <http://www.worldtradelaw.net/> (accessed 4 March 2011).
52. See WTO, WT/DS/294/AB/R, 18 April 2006, United States, Laws, Regulations and Methodology for Calculating Dumping Margins, ("Zeroing"), Appellate Body, available at <http://www.worldtradelaw.net/> (accessed 4 March 2011); WTO, WT/DS322/AB/R, 9 January 2007, United States—Measures Relating to Zeroing and Sunset Reviews, Appellate Body, available at <http://www.worldtradelaw.net/> (accessed 4 March 2011).
53. See WTO, WT/DS108/R, 8 October 1999, United States—Tax Treatments for "Foreign Sale Corporations," Panel, available at <http://www.worldtradelaw.net/> (accessed 4 March 2011).
54. See WTO, WT/DS2/AB/R, 29 April 1996, United States—Standards for Reformulated and Conventional Gasoline ("Reformulated Gasoline"), Appellate Body, available at <http://www.worldtradelaw.net/> (accessed 4 March 2011).
55. See WTO, WT/DS/58/AB/R, 12 October 1998, United States—Import Prohibition of Certain Shrimp and Shrimp Products, Appellate Body, available at <http://www.worldtradelaw.net/> (accessed 4 March 2011).
56. Thomas Cottier, "DSU Reform: Resolving Underlying Balance-of-Power Issues," in *The WTO at Ten, The Contribution of the Dispute Settlement System*. G. Sacerdoti, A. Yanovich, and J. Bohanes, eds. (Cambridge: Cambridge University Press

- 2006), pp. 259–265.
57. Barfield Claude E., *Free Trade, Sovereignty, Democracy: The Future of the World Trade Organization*, (Washington, DC: AEI Press, 2001).
 58. Thomas Cottier and Takenoshita, Satoko, “The Balance of Power in WTO Decision-Making: Towards Weighted Voting in Legislative Response,” in: *Aussenwirtschaft*, 58 (2) (2003) pp. 171-214; reprinted in: Matsushita M and Dukgeun, A. (editors.), *WTO and East Asia, New Perspectives*, London 2004 pp. 51-89; Thomas Cottier, *The Challenge of WTO Law: Collected Essays* (London: Cameron, 2007), pp. 217.
 59. Steve Hughes and Nigel Haworth, Nigel, *The International Labour Organisation (ILO): Coming in from the Cold* (New York: Routledge, 2011).
 60. See Fabrizio Pagani, *Peer Review : A Tool for Cooperation and Change : An Analysis of an ECD Working Method*, OECD: General Secretariat, Directorate for Legal Affairs, SG/LEG(2002)1.
 61. Paragraph C (ii) of the TPRM (Annex 3 to the Marrakesh Agreement Establishing the WTO).
 62. Paragraph C (v) of the TPRM.
 63. Julien Chaisse and Debashis Chakraborty, “Implementing WTO Rules through Negotiations and Sanction: The Role of Trade Policy Review Mechanism and Dispute Settlement System,” *Pennsylvania Journal of International Economic Law* 28:1: pp. 153-185 (2007).
 64. Steve Hughes and Nigel Haworth, *The International Labour Organization (ILO): Coming in from the Cold*. (New York: Routledge, 2011).
 65. Gary Clyde Hufbauer and Jeffrey J. Schott, Jeffrey J., *NAFTA Revisited: Achievements and Challenges* (Washington, DC: The Institute for International Economics, 2005).
 66. See USTR, “NAFTA at Eight,” and “NAFTA at Ten,” www.ustr.gov. See Kofi Addo, *Core Labour Standards and International Trade: Lessons to be learnt from the Regional Context*, PhD, University of Bern 2010, p. 181 (forthcoming).
 67. *Id.* p. 187.
 68. See generally, Christian Joerges and Ernst-Ulrich Petersmann, *Constitutionalism, Multilevel Trade Governance and Social Regulation* (Oxford: Hart, 2006).
 69. See generally, John H. Jackson, *Sovereignty, the WTO, and Changing Fundamentals of International Law* (Cambridge: Cambridge University Press, 2006).
 70. Thomas Cottier. 1996. “The Challenge of Regionalization and Preferential Relations in World Trade Law and Policy.” *European Foreign Affairs Review* 2: 149-167; Kluwer Law International.
 71. Thomas Cottier and Matthias Oesch, *International Trade Regulation: Law and Policy in the WTO, the European Union and Switzerland* (London and Bern: Cameron May and Staempfli Publishers, 2005) pp. 367–368.



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BUILDING INTERNATIONAL CLIMATE COOPERATION

Lessons from the weapons and trade regimes for achieving international climate goals

The challenge of climate change is that solutions must engage every country that contributes to greenhouse gas emissions, as well as every country that suffers from the impacts. Currently, this challenge is mostly managed in an all-issues-on-the-table United Nations negotiating forum that must balance the interests of 195 parties, a necessarily complex and slow-moving process. While work toward a unifying agreement will continue, prudence suggests also investigating new ideas and additional forums.

Building International Climate Cooperation considers lessons from other global endeavors that, like climate change, require comprehensive international action. Do those regimes offer lessons for those who seek to mitigate the climate crisis?

This volume explores this question by examining two such areas where considerable experience has been gained in reaching agreements, developing institutions, and ensuring efficacy. The first, control of weapons of mass destruction, is a field relatively unknown in the climate change world. The second, multinational economic agreements, is more familiar ground but warrants deeper examination. Although society has yet to “solve” its weapons and economic challenges, notable progress has been made in both areas, and thus they offer valuable insights for improving our efforts to address climate change.



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