



Green Planet Blues

Critical Perspectives on Global
Environmental Politics

SIXTH EDITION

EDITED BY
KEN CONCA AND GEOFFREY D. DABELKO



“The updated sixth edition of *Green Planet Blues*, edited by Conca and Dabelko, is a must-read for students, scholars and policy makers concerned about environmental scarcity and environmental sustainability. The chapters of this volume deal with this important subject in a comprehensive and insightful manner, and in its breadth and depth, this book remains a major contribution.”

—Ashok Swain, *Professor of Peace and Conflict Research & UNESCO Chair of International Water Cooperation, Uppsala University*

“*Green Planet Blues* remains the go-to anthology for capturing the big theoretical debates and thematic issues in global environmental politics. Important topics covered include climate change, environmental security, sustainability and ecological justice. What makes this volume distinctive is the inclusion of both academic and practitioner voices that inspire as well as remind us of the challenges faced in building institutions and governance mechanisms for the environment.”

—Erika Weinthal, *Lee Hill Snowdon Professor of Environmental Policy, Nicholas School of the Environment, Duke University*

“*Green Planet Blues* is a unique text, capturing a truly global diversity of voices and perspectives on the state of our planet. Insightful readings, along with connecting essays and discussions, will inspire critical reflection and debate. This new edition, which takes us from the elite actors negotiating the Paris Agreement to grassroots activists in Appalachia, articulates the factors that have led to our present-day crisis and offers glimpses of a sustainable future.”

—Kate O’Neill, *Professor, Department of Environmental Science, Policy, and Management, University of California, Berkeley*



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GREEN PLANET BLUES

Revised and updated throughout, this unique anthology examines global environmental politics from a range of perspectives and capturing the voices of both the powerless and the powerful. Paradigms of sustainability, environmental security, and ecological justice illustrate the many ways environmental challenges and their solutions are framed in contemporary international debates about climate, water, forests, toxics, energy, food, and biodiversity.

Organized thematically, the selections offer a truly global scope. Seventeen new readings explore climate justice, globalization, land and water grabs, climate change and conflict, China's international environmental relations, and the future of climate politics in the wake of the Paris Agreement. This book stresses the underlying questions of power, interests, authority, and legitimacy that shape environmental debates, and it provides readers with a global range of perspectives on the critical challenges facing the planet and its people.

This new edition of *Green Planet Blues* connects directly with a wide-range of upper-level undergraduate and graduate-level courses.

Ken Conca is Professor of International Relations in the School of International Service at American University. He is the author and editor of several books on global environmental politics, peacebuilding, global governance, the United Nations, and the politics of water.

Geoffrey D. Dabelko is Professor and Associate Dean at Ohio University's Voinovich School of Leadership and Public Affairs. He is also a Senior Advisor for the Environmental Change and Security Program at the Woodrow Wilson Center in Washington, DC.



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CRITICAL PERSPECTIVES ON
GLOBAL ENVIRONMENTAL POLITICS

**EDITED BY KEN CONCA
AND
GEOFFREY D. DABELKO**

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PREFACE

For their help, advice, and support as we prepared this and previous editions, we thank Michael Alberty, Liliana Andonova, Christine Arden, Jon Barnett, Bethany Bella, Michele Betsill, John Carballo, Steve Catalano, Beth Chalecki, Elizabeth DeSombre, Linsey Edmunds, Kelli Fillingim, Grace Fujimoto, Katie Gardner, Shannon Green, Peter Jacques, Adam Jadhav, Sara Kamins, Audrey Komey, Tim Kovach, Elisabeth Malzahn, Kay Mariea, John M. Meyer, Ronald Mitchell, Alaina Morman, Adil Najam, Kate O'Neill, Rodger Payne, Rodrigo Pinto, Dennis Pirages, Kurt Rakouskas, Armin Rosencranz, Antoinette Smith, Jennifer Swearingen, Carolyn Sobczak, Joe Thwaites, Marietta Urban, Stacy VanDeveer, Sharif Wahab, Toby Wahl, Greg White, and Sarah Wilton. We also acknowledge the help of students, faculty colleagues, and staff at our current institutions, the Global Environmental Politics Program in American University's School of International Service (Conca) and the Environmental Studies Program at Ohio University's Voinovich School of Leadership and Public Affairs (Dabelko). The first edition of this book would never have been possible without the support of the Harrison Program on the Future Global Agenda at the University of Maryland, and we have benefited for many years from Geoff Dabelko's affiliation with the Environmental Change and Security Program of the Woodrow Wilson International Center for Scholars. We are also grateful to several anonymous respondents to the student and faculty surveys we distributed to collect feedback on previous editions, and to Natalja Mortensen, Charlie Baker, and Cathryn Henderson and the team at Routledge.

As with past editions, we have updated the text to take account of several new developments. In this edition we have added new material on the Paris Agreement on climate change, the Sustainable Development Goals, trade and the environment, climate change and conflict, grassroots activism, and the concept of resilience. In making these changes, we have had to part with some essays used in earlier editions—as always, with regret! Readers may wish to consult earlier editions of the book for these still-useful items, as well as to track the evolution of the field over the past few decades (at least as we've interpreted it). We have tried to remain true to the book's original goals of discussing crosscutting issues of power and authority, juxtaposing

different environmental paradigms, and presenting a diversity of voices. In addition, we include discussion questions in the introduction to each of the book's parts, which we hope will stimulate critical thought, conversation, and learning.

Because some of the selections presented in this volume are excerpts from longer works, a brief explanation of our editing philosophy is in order. In those cases where space limitations precluded reprinting an entire essay, our goal has been to edit in such a way as to emphasize the underlying ideas and concepts. In many cases, this has meant leaving out complex elaborations, trenchant asides, or supporting examples. We have preserved the original notes corresponding to the material reproduced here but left out notes corresponding to passages of text not included. Readers seeking further background, greater detail, or additional references should consult the original material.

INTRODUCTION: FROM STOCKHOLM TO SUSTAINABILITY?

KEN CONCA AND GEOFFREY D. DABELKO

Think globally, act locally. Spaceship Earth. The common heritage of humanity. The global commons. Pollution does not respect national borders. The Earth is one, but the world is not. We have not inherited the Earth from our parents; we have borrowed it from our children. The Anthropocene.

Each of these well-known phrases invokes similar themes: the interconnectedness of the global environment; the close ties between environmental quality and human well-being; and the common fate these realities impose upon all of the planet's occupants, present and future. We live, as we have for some time, in an era of global environmental politics.

Pollution, ecosystem destruction, and natural resource depletion are not new problems. Many regions and localities were grappling with these issues long before the industrial revolution or even the emergence of the modern system of nation-states. And just as environmental problems have a long-standing history, so do the political struggles that inevitably accompany them. Severe shortages of wood led to conservation efforts in Babylonia during the time of Hammurabi.¹ Measures to protect wetlands in recognition of their importance as sources of fish, game, and fuel have been traced to the sixth century AD in the Huang-Huai-Hai Plain of northeastern China.² Air-quality crises in London during the early stages of the industrial revolution led to the formation of smoke-abatement societies advocating legislative action.³ One can easily imagine the political controversies that must have

engulfed each of these episodes, given that the measures protecting environmental quality or altering access to natural resources would have offended powerful interests and created new winners and losers in society.

Today, the dramas of environmental politics are often played out on a global stage, even when the action may appear local. It is generally agreed that human transformation of the environment is a global-scale problem. The World Health Organization lists climate change, stratospheric ozone depletion, and ecosystem changes as global threats to human health, and the UN Food and Agriculture Organization identifies several environmental drivers among its list of threats and challenges for the world's food supply.⁴ Some observers have gone so far as to suggest we have entered a new period of geologic time, the "Anthropocene," defined by the emergence of humanity as the principal force modifying planetary systems and ecology.⁵ In some cases, we use the term "global" because the system under stress is globally interconnected in a physical sense, as is true of the Earth's climate, the oceans, or the atmosphere's protective ozone layer. In other cases, accumulated local events produce consequences of global significance, as in the depletion of the world's fisheries or the reduction of the planet's biological diversity. For many of our challenges, the rates of change—adding greenhouse gases to the atmosphere, exterminating species, inventing new chemicals with potentially toxic properties—are unprecedented in human history.

It makes sense, then, to recognize global environmental *problems*. But what do we mean when we speak of global environmental *politics*? To answer this question, consider what people see when they look at a forest. Some see a stock of timber to be exploited for economic gain. Others see a complex ecological system that holds the soil in place, stabilizes the local water cycle, moderates the local climate, and fosters biological diversity. Still others see the forest as a home for people and other living things, a site to engage in cultural practices, or perhaps an ancestral burial ground. Finally, some see the forest as a powerful cultural symbol on broader scales: the forest is a dynamic living system that reflects the potential harmony between humanity and nature and provides a link between the past and the future. Playing out the differences in these visions of the forest—whether that means trying to reconcile them, seeking a delicate balance among them, or fighting to make one vision preeminent—is the stuff of politics, by any definition of the term. Nor are such tensions around the meaning of a place confined to rural or unspoiled domains. Consider a city challenged with flooding during extreme rainfall (the sort of storm that climate change is making more frequent in many locales). Calls to convert developed land back into green space, as a way to absorb run-off or create a flood buffer, may make sense as a way to enhance "resilience." But the same space being claimed to "make room for the river" and protect the lives and property of (some) city residents is likely to be someone else's home, someone else's history to be preserved. For still others, it may be seen as a different kind of resource: a target for

“urban renewal,” economic development, transformation, and job creation. Thus, politics—the term we use for the pushing and shoving that occurs when we try to make collective decisions and allocate resources for value-laden matters.

But why *global* environmental politics? Here we turn to the pervasiveness, but also the incompleteness, of borders in modern life. Our world is at once fragmented by the political division into sovereign states—and then reassembled by pervasive flows of people, goods, money, ideas, images, and technology across borders. In such a world, conflicting visions of the forest take on international significance. Some see in the forest an important source of international economic power, giving those who control it influence in international markets and a reliable source of foreign exchange. Others see it as a powerful symbol of global interdependence: the forest reflects the global consequences of local acts in that its destruction may alter the planet’s climate or deplete its stock of biological diversity. Still others see a very different sort of international symbol: the forest represents national sovereignty in that it confirms a nation’s right to do as it sees fit with the resources within its territory—a concept that the United Nations has affirmed as the “permanent sovereignty” of nations over their natural resources.⁶ From the affluent vantage point of a classroom in Europe or America, the right to do as one sees fit with nature within one’s borders may seem a luxury that a crowded planet cannot afford. But people who feel their sovereign rights threatened are not likely to agree—particularly if those rights were won in a struggle for independence that forged their very nation. And again, as with the forest, so with the city. For some, that contested neighborhood is the daily expression, rooted in history and culture, of what it means to be American (or Brazilian, or Chinese, or Egyptian, or ...). For others, it may be a node in a transnational network of mobility, opportunity, and change, of the sort found in the ethnic enclaves that dot any city. For still others, that same neighborhood is part of a very different transnational vision. It is a resource in global economic competition, to be configured in whatever way will best attract the upscale residents or tourists or investors who spend the surpluses from capital accumulation—perhaps through attractive green spaces, perhaps buried under concrete and steel and glass. Each of these powerful visions for that small patch of land has international resonance, and their collisions create controversies that transcend the borders of place or identity.

Often, these competing visions reflect different interests held by individuals, groups, and perhaps even entire nations. They are also a product, however, of the structures that govern world politics. The institution of national sovereignty, the division of labor in the capitalist world economy, the rise of transnational networks of environmentalists, the predominance of powerful beliefs about the links between consumption and “progress”—all of these underlying features of contemporary world politics shape what people see when they look at a forest, or a neighborhood.

Competing visions, values, and interests often lead to conflict. Actors disagree about the nature of the problem, the effectiveness or fairness of proposed

solutions, and the appropriate location of responsibility. Thus, studying global environmental politics means understanding the conflicts of interest that surround environmental issues—but also asking how interests, values, and visions related to the environment are shaped.

The study of global environmental politics also involves the search for cooperative solutions to ecological dilemmas. The idea that global environmental problems require “international cooperation” is widely accepted, but the appropriate scope and content of such cooperation are hotly contested. Does international cooperation mean formal, treaty-based agreements among governments, such as the Paris Agreement on climate change? Does it mean a broader “global bargain” between rich and poor nations, linking a number of issues in a single package, as is often attempted (and rarely achieved) at global environmental summits? Or does it refer to a still-broader process of global dialogue not limited to governments, in which different societies move toward a global convergence of values, as in the United Nations’ effort to craft global Sustainable Development Goals? Does an increasingly global network of environmental organizations represent an effective new form of international cooperation, or is it simply one more way in which the strong impose their will upon the weak? Is the goal of international cooperation to create an increasingly dense web of transnational linkages that binds nations to a common future and a common commitment to environmental protection? Or should we instead begin delinking an ever more tightly coupled, “globalizing” world system, so that various localities and regions have more flexibility to pursue responses appropriate to their unique circumstances? Today, across much of America and Europe, the politics of Trumpism and Brexit appear to construct internationalism (environmental or otherwise) as progressive and nationalism as conservative. Yet, as recently as the late 1990s and early 2000s, it was just the opposite, with progressives decrying the rampant spread of free trade, capital deregulation, and “globalization.”⁷

Finally, an important dimension of the study of global environmental politics involves connecting the patterns of international conflict and cooperation over the environment to some of the larger changes under way in world politics. If studying the structure of world politics gives us insight into the character of global environmental problems, the reverse is also true: environmental problems and (sometimes) responses are part of the engine that is changing the shape of the world system. It is no surprise that issues related to water, food, energy, climate, and biodiversity have emerged as critical themes in the study of international relations and world politics. The tussling over the Paris Agreement is not simply about the climate; it also reveals an important transnational political cleavage between (largely, but not always, progressive) multilateralists and (largely, but not always, conservative) nationalists. Another recent trend—the rise of ultra-conservative, nationalist regimes in the US and Europe—also has ties to global environmental politics. Along with immigration, trade, and the cultural politics of divisiveness, resistance to multilateral

environmental regulation has also fueled the movement, targeted as an affront to national sovereignty.

Similarly, the debate about whether climate change is a suitable topic for discussion in the UN Security Council is not simply about the links between climate change and conflict; it, too, reveals political structure. An emerging coalition of countries is trying, with some urgency, to change how we understand “security” in the 21st century, spearheaded by a coalition of European nations and small-island developing states threatened by sea-level rise. They ask: If losing one’s national territory to the encroaching sea is not an existential threat to security, what is? Their efforts, in turn, reveal a growing split in the normally solid “Group of 77” coalition of developing countries at the UN. On one side are those developing countries who share that sense of urgency, for good reason given the storms buffeting their coasts and the millions of citizens living in the floodplain. On the other side are those who fear concentrating too much power in the hands of a secretive, hierarchical body—again, for good reason, given the Security Council’s past performance. Studying the politics of the global environment may also give us greater insight into the emerging patterns of world politics as a whole.

From Stockholm to Rio, to Johannesburg, back to Rio, to Paris—and Beyond

A series of global summit meetings—the 1972 UN Conference on the Human Environment, held in Stockholm, Sweden; the 1992 UN Conference on Environment and Development, held in Rio de Janeiro, Brazil (known popularly as the Earth Summit); the 2002 World Summit on Sustainable Development, held in Johannesburg, South Africa; the 2012 UN Conference on Sustainable Development, or “Rio+20” meeting, held in Rio de Janeiro; and the 2015 Paris Summit on Climate Change—provide useful benchmarks for the evolution of global environmental politics.⁸ The contrasts among these five events reflect many underlying changes in the world during the intervening four decades.

One important shift concerned the international political context. The first global environmental summit, in Stockholm, occurred in the shadow of the Cold War. The governments of Eastern Europe and the Soviet Union boycotted the conference after a dispute over the representation of a then-divided Germany. Two decades later, in 1992, the Rio Earth Summit took place in the relatively optimistic afterglow of the end of the Cold War, amid a general sense of new opportunities for global cooperation. A decade later in Johannesburg (2002), much of that optimism had faded in the face of globalization controversies; increasingly muscular American unilateralism; the gritty reality of enduring global political, economic, and cultural conflicts; and the shocking events of September 11, 2001. The Rio+20 summit of

2012 came in the wake of a global financial crisis; the continued emergence of new powers such as India, Brazil, and China on the world stage; and domestic political fragmentation across Europe and North America. By the end of 2015, when governments gathered in Paris to try to salvage something from the wreckage of a struggling Framework Convention on Climate Change, the parameters of cooperation in an increasingly antiglobalist moment were limited to pooling the voluntary cooperative acts each nation chose to put on the table. After the near-collapse of the climate regime during the 2009 Copenhagen conference of the parties, a tactical decision was made to drop binding targets and timetables in favor of “national contributions” determined by each nation. This switch allowed for agreement, while also increasing skepticism about the value of cooperation.

Each of these global summits was stamped with the imprint of its context—whether the Cold War–induced boycott of the Soviet bloc at Stockholm, the ambitious post-Cold War optimism of Rio 1992, the reluctance of the leading powers to make new commitments at Rio 2012, or the cautious commitments made in Paris during a period of economic retrenchment.

A second clear change since Stockholm 1972 is the emergence of global public awareness and concern. The Stockholm conference took place in the wake of the first Earth Day (1970) and at a time of rising popular concern in the United States and Europe about environmental problems, particularly air and water pollution. Many of the participants at Stockholm—particularly those from the global North—framed environmental problems as the by-products of an affluent, industrialized lifestyle. The implication was that the poorer regions of the world did not suffer as much from environmental problems as did the wealthy, nor (it was said) did they exhibit the same level of concern about such problems. By the time of the first Rio conference in 1992, however, the notion that there is both a “pollution of affluence” *and* a “pollution of poverty” had gained much broader acceptance. As the environmental causes of poverty became clearer, what many of those suffering from poverty have presumably known all along became more generally understood: environmental concerns were not the exclusive property of affluent people or industrialized countries, hence Rio’s linkage between environment and development. By the time of the Johannesburg summit, known in United Nations circles as “Rio+10,” development issues had become central to the discussion—so much so that some environmental advocates felt the environmental agenda was being largely ignored, causing them to refer to the event ruefully as “Rio minus ten.” At Rio+20, the deemphasis of environmental criteria caused the head of Greenpeace International to famously tweet “longest suicide note in history” when the summit outcomes document was released. Still, in the wake of that meeting, the world’s governments were able to commit to an ambitious set of Sustainable Development Goals (see Part Four of this volume) with bold targets on clean water, protection of the oceans, clean energy, and sustainable cities, alongside more traditional development goals of ending poverty, improving health, and extending access to education and economic opportunity.

A third important trend over these decades has been the tremendous growth in the scientific understanding of environmental problems. Stockholm focused attention principally on relatively narrowly defined problems of air and water pollution. Today, environmental science is a much more complex and interdisciplinary enterprise, whether it grapples with modeling our changing climate, assessing the public health consequences of the cocktail of toxic substances we encounter in daily life, or unraveling the reasons for the ongoing decline in global fish catches. These shifts reflect, in part, a changing scientific paradigm—one that views the Earth as a single integrated system with complex links among the large-scale ecological systems of land, oceans, atmosphere, and biosphere. They also reflect scientists' greater capacity to measure, monitor, and model complex processes of environmental change.⁹

Yet the growth of scientific knowledge is never immune to political context. Following the destruction of the World Trade Center on September 11, 2001, the continued commitment of governments to open information flows and exchange of environmental data could not be taken for granted in light of fears about "environmental terrorism." We have also seen pitched battles around the reliability of expertise. For American readers, the debates around "climate skepticism" and "climate denial" will be the most obvious example. Yet, the contested politics of expertise is more complex. One of the more intense political battles at the 2012 Rio summit concerned whether the Sustainable Development Goals should be defined primarily by issue experts (the preference of many governments of the North) or by political actors (favored by many in the South, and the ultimate method for negotiating the SDGs agreed to in 2015).

The governments and other actors who gather to discuss global environmental problems have also undergone notable changes in the decades since the 1972 Stockholm conference. Almost none of the governments gathered in Stockholm had any form of national environmental bureaucracy; two decades later in Rio, virtually all did (even if some are inclined, at times, to dismantle that capacity or limit its voice). In many cases, these agencies have enabled governments to take advantage of the growth of environmental knowledge to analyze more effectively the causes and consequences of environmental problems. In some cases, the agencies themselves have evolved into advocates for various environmental protection programs, producing more complex internal debates within national delegations. Today, environmental considerations have also been mainstreamed in the rhetoric and policy guidelines—if not always the actions—of intergovernmental organizations such as the World Bank, the International Monetary Fund, and the World Trade Organization, and in the development assistance or "foreign aid" practices of donor countries. Yet, their diffusion is far from complete, as these principles have only limited penetration into sovereign wealth funds and private equity, which have emerged as important sources of large-scale international investment and development-related lending.

Nongovernmental organizations, too, have undergone substantial changes. During the Stockholm conference, 134 NGOs, virtually all from the industrialized

world, were officially accredited participants. Two decades later, more than 1,400 NGOs were officially participating in the 1992 Rio summit, with about one-third of these groups from the global South—and countless more unofficial participants.¹⁰ Over time, international networking and coalition building among environmental groups have become much more common.¹¹

A final measure of the changes since Stockholm 1972 is the growth in the number of international environmental treaties, agreements, and cooperative accords. According to a database compiled by Ronald Mitchell of the University of Oregon, there are more than 1,300 multilateral (three or more parties) environmental agreements in place, and even more bilateral (two-party) accords.¹² Many are relatively narrow in scope: for example, agreements between two neighboring countries on a specific environmental problem, or regional agreements involving small numbers of countries and narrow agendas. But the list also includes several major international accords adopted since the Stockholm conference, including agreements on ocean pollution, acid rain, preservation of the ozone layer, the international trade in endangered species, the trade in hazardous waste, environmental protection in Antarctica, and global pollutants such as mercury. By 1992, when the Rio summit rolled out global treaties on biological diversity and climate change, tried but failed to get a global treaty on forests, and set in motion the process for a global treaty on desertification, treaty designers had a much broader set of examples to draw upon than did their predecessors. As a result, they also had at least a crude understanding of what makes various approaches to international environmental cooperation effective.¹³

Since Rio 1992, some important new international agreements have been reached, such as the Cartagena Protocol on Biosafety and the Stockholm Convention on Persistent Organic Pollutants. But the pace of agreement formation has slowed considerably, for both global and regional agreements.¹⁴ Indeed, climate change illustrates the sometimes dizzying array of ups and downs in global environmental governance. The optimistic but very general commitments of the 1992 UN Framework Convention on Climate Change were followed up by the specific goals and timetables that its parties adopted in the Kyoto Protocol in 1997. Yet, the Kyoto agreement was largely broken a decade later, in part due to the decisions of the United States and Canada not to meet their commitments under the protocol. The Paris Agreement of 2015 reflected both an optimistic turn toward governments' ability to agree on a path forward, and a more cautious new paradigm rooted in a set of voluntary commitments that do not come close to meeting the accord's rhetorical aspirations. The Trump administration's decision to cease participation in the Paris accord and its announced intent to withdraw from the agreement—something the United States cannot do formally until after the 2020 presidential election, given the agreement's provisions—is just the latest dramatic turn in the saga, and few expect it to be the last.

It is equally important to stress what has not changed in the decades since the 1972 Stockholm conference. Many of the stumbling blocks to effective global response seen at Stockholm have also been in full evidence at summits and remain with us today. These impediments include the tremendous mistrust and suspicion governing relations between the global North and South in world politics; the tenacious embrace of absolute conceptions of national sovereignty by governments, even as they acknowledge the need for coordinated global responses to problems that do not respect borders; and the tensions between the long-term vision necessary for ecologically sane planning and the short-term concern for economic growth and political stability that preoccupies most governments.

Perhaps the most important continuity is that global environmental change has continued at an alarming rate. Since 1970, global commercial energy consumption, a major source of environmental impacts, has more than doubled, and other global indicators of human impact on the environment—food production, water use, overall economic activity, and population—have increased in roughly similar proportions. To be sure, these very crude indicators of human stress on environmental systems can mask as much as they reveal. They say nothing about how underlying activities actually affect the environment, about who or what may be responsible, or about who suffers the consequences most directly and immediately. But they do indicate the scale of the problem and the enormity of the challenge of reorienting fundamental practices that drive growth, production, consumption, and environmental transformation in the current world system.

This mixed picture of continuity and change raises an obvious question: Compared to where things stood at the Stockholm conference and the dawn of global environmental politics, where do we stand today? While we lack a single, all-encompassing measure that allows us to evaluate the world's environmental status or prospects, we note that many environmental advocates have grown dismayed or even cynical about what they see as an increasingly ritualized—and increasingly ineffectual—process of global environmental summitry. In this view, Rio 1992, which produced multilateral treaties on climate and biodiversity and the ambitious goals embodied in *Agenda 21*, the negotiated blueprint for promoting sustainable development, was the “high-water mark” for diplomatic approaches to global environmental rescue. Johannesburg and the 2012 Rio summit, in contrast, were noteworthy mainly for demonstrating the lag in implementing these commitments while producing little in the way of tangible products, specific targets and timetables for action, or creative new ideas. The voluntary climate change commitments agreed to in Paris in 2015 were hailed as an achievement. But the insufficiency of those goals in addressing the worst effects of climate change, and subsequent US abandonment of the Paris Agreement, create more questions about the efficacy of international diplomacy as the primary mechanism for responding to global environmental problems.

More broadly, does the period since Stockholm tell an optimistic story of global society moving to meet the challenges of ecological interdependence, or do those years chronicle an unwillingness or inability to grapple with the root causes of the problem? Perhaps both are true. Growing knowledge and awareness, organizational adjustments, and occasional substantive breakthroughs reveal important possibilities for change, learning, and effective global cooperation. At the same time, enduring divisions and the far less optimistic tenor of the present moment underscore the depth of the political challenge posed by global environmental problems.¹⁵

Conflicting Views of the Environmental Problematique

Growing scientific understanding and shared levels of public concern do not automatically translate into a shared understanding of the social causes of environmental problems. One of the first challenges facing students of global environmental politics is to sort out a potentially bewildering debate on the causes of pollution and environmental degradation. Some of this uncertainty lies in the realm of science. The physical, chemical, and biological mechanisms involved in processes such as climate change, desertification, and deforestation are sometimes poorly understood by leading experts, to say nothing of citizens, policy makers, and interest groups. For example, it is only in the last few decades that the global interaction of oceans, atmosphere, land, and biosphere has become a central concern of such disciplines as oceanography, atmospheric science, and terrestrial ecology, causing a growing number of scholars to rethink traditional disciplinary boundaries in these fields. Although knowledge is expanding rapidly on many fronts, scientific uncertainty remains substantial in the face of the complex processes of environmental change. Exactly where that boundary resides is itself a subject of political contention, as seen in the efforts of climate activists to argue that the science is settled, and of skeptics to state (or overstate) uncertainties.¹⁶

These aspects of technical complexity are matched by similar controversies, debates, and uncertainties surrounding the social dimensions of environmental change. In explaining why human beings have had such a substantial impact on planetary ecosystems, different analysts invoke factors as diverse as values, technology, culture, ideology, public policy, demographic change, and social structures such as class, race, or gender. Some observers elevate one or a few of these factors to the role of central cause, treating the others as mere symptoms. Others have sought to develop more complex models that stress the interaction of these various forces and processes. This complexity often runs afoul of the common desire among citizens and politicians to have simple explanations and simple responses.

Many see the problem as essentially one of values—in particular, the value that modern societies attach to consumption.¹⁷ In this view, the soaring levels of

consumption that track the rise of the consumer society are also surging indicators of environmental harm. Our consumer culture translates wants into needs, stresses material-intensive forms of social gratification, and overwhelms older, more ecologically sustainable traditions that stand in its way or provide alternative pathways. In doing so, the consumer society's exploitation of resources threatens to exhaust, poison, or unalterably disfigure forests, soils, water, and air. Members of this consumer society—including the editors of this volume, many of its authors, and most of its readers—are responsible for a disproportionate share of the global environmental challenges facing humanity. Meanwhile, as consumerism spreads through increasingly sophisticated advertising, pop culture, and the global media, more and more regions of the planet adopt the aspirations of the consumer society.¹⁸

Technology is another commonly cited culprit. Barry Commoner, a key figure in raising public awareness about environmental problems in the United States in the 1960s and 1970s through such widely read books as *Making Peace with the Planet* and *The Closing Circle*, invoked the simple example of the production of beer bottles in the United States to illustrate the technological dimension.¹⁹ Writing in the 1970s, Commoner investigated the impact of three factors commonly cited as causes of environmental problems: population growth, rising levels of consumption per capita, and technological change. He pointed out that the number of beer bottles produced in America increased by a dramatic 593 percent from 1950 to 1967, even though the population grew by only 30 percent and beer consumption by only 5 percent per capita. Clearly, a technological change—the replacement of reusable beer kegs and returnable bottles with single-use, throwaway bottles—led to the bulk of the increase and, hence, to the bulk of the environmental impact in terms of energy use, trash, and so on. Commoner argued that similar technological changes, at work across most of the key sectors of modern society, were at the heart of the environmental crisis. The surge in popularity of overly large and fuel-inefficient sport-utility vehicles as a means of single-passenger transportation, and the rapid replacement of mobile phones with newer models, provide more recent examples of this process.

Some observers argue that prevailing technologies and values are best understood as expressions of underlying power dynamics in society. The pioneering “social ecologist” Murray Bookchin—though not necessarily disagreeing with the critique of the consumer society or the cautions about technology's role—stressed the importance of social inequality. Bookchin warned against attributing environmental problems to such vague and impersonal formulations as “values,” “technology,” and “humanity.” Such reasoning “serves to deflect our attention from the role society plays in producing ecological breakdown.”²⁰ According to Bookchin,

a mythic “Humanity” is created—irrespective of whether we are talking about oppressed ethnic minorities, women, Third World people, or people in the First World—in which everyone is brought into complicity with powerful corporate elites in producing environmental dislocations. In this way, the social roots of ecological

problems are shrewdly obscured. A new kind of biological “original sin” is created in which a vague group of animals called “Humanity” is turned into a destructive force that threatens the survival of the living world.²¹

Today, a large and sophisticated branch of environmental social science known as “political ecology” stresses the need to recognize how social inequality and power asymmetries feed environmental degradation and resource overexploitation.²² In this view, societies constructed upon hierarchies of race, class, gender, or other forms of concentrated power are fundamentally based on exploitation. Such societies have an inherent tendency to seek domination over nature rather than a means of living in harmony with it, just as they promote the domination of some people by others.

Vandana Shiva, who has written extensively about forestry issues in postcolonial India, provides a model aimed at linking diverse causal forces such as technology, values, and social structure.²³ For Shiva, history is key. Technological and demographic changes, hierarchical patterns of social structure, and consumption-oriented values are co-evolutionary products of Indian society’s dominant historical experience—the political, economic, and social transformations brought about by more than a century of British colonial rule. Thus, in her view, causes of environmental degradation in India as diverse as the industrial revolution, the capitalist world economy, and the destructive power of modern science and technology are “the philosophical, technological, and economic components of the same process.”²⁴ Sorting out this diverse array of claims about social causes of environmental change requires carefully detailed, historical study of the ways in which economic, social, and political institutions in society co-evolve and interact over time.²⁵

Many of the selections in this volume present their own particular understanding of the causes of environmental problems. It will become apparent to the reader that these various causal claims are based on very different understandings of the sources of power, interest, authority, and legitimacy in society. Sorting out such diverse claims does not guarantee that effective policies and institutions will be designed. Actors may agree on the causes of a problem but still disagree on the appropriate responses; they may see their interests affected differently or hold different views about the fairness or effectiveness of a particular response. But grappling with the complex array of causes does seem to be a necessary step if appropriate responses are to be crafted. Perhaps just as important, examining the diversity of claims about what is happening also helps us to understand the equally diverse beliefs about history, justice, and responsibility that various actors bring to the debate.

Global Environmental Politics: Power, Ideas, and Voices

The material in this book has been selected with three goals in mind. One is to pay particular attention to underlying questions of power, interest, authority, and

legitimacy that shape global environmental debates. The challenges of the global environment are often framed as largely technical and administrative tasks of promoting policy coordination among governments. Clearly, rational policies and effective intergovernmental cooperation will be a crucial part of any meaningful response to such challenges. But a narrow focus on governments, treaties, and public policies can blur our understanding of some of the deeper components of the problematique. The environmental problems facing the global community raise deeper questions of governmental authority, of the relationship between the state and society, and of processes of economic and cultural globalization that challenge state sovereignty and the autonomy of local communities.

Second, we have tried to emphasize the *ideas* that have most powerfully shaped the evolving debate over the global environment. By assembling under one cover some of the most influential voices in the debate, we hope to provide a firsthand sense of how ideas have shaped action, while at the same time stressing the obstacles to changing the world through new ideas alone. Thus, we examine some of the most powerful paradigms that prevailed at the time of the Stockholm conference in 1972 and the controversies engendered by those views. We also explore powerful and controversial new paradigms that have emerged in the years since then, around themes of sustainability, environmental security, and ecological justice. Comparing these sets of ideas over time not only reveals how people's thinking has changed but also highlights enduring themes.

Our third goal has been to present a broad range of voices in what is and must be a *global* debate. This goal might appear to conflict with our previously stated intention of presenting the most powerful and influential ideas: one might be tempted by a sense of urgency to try to narrow the debate to what the most powerful voices consider feasible or desirable. In our view, narrowing the debate on the grounds of political expediency would be deeply troubling on moral grounds, given the stakes involved for people, their livelihoods, their health, and all forms of life on the planet. It also strikes us as potentially disastrous—not expedient at all—given the current lack of global consensus on so many fundamental issues. The poor and powerless might lack the ability to shape the ecological future they desire, but they may well have the power to veto proposed “solutions” that ignore their needs and interests. Although universal agreement is a utopia difficult even to imagine, durable responses to global environmental problems can be achieved only through a broad social consensus. Thus, we have chosen essays for this book with the intent of including perspectives from the global South as well as the global North, and with voices that are rural as well as urban, female as well as male, and critical of existing institutions as well as broadly comfortable working within them.

The book's organization is meant to serve these goals. Part One discusses the dominant paradigms and controversies that shaped debate at the time of the Stockholm conference, and in its wake. The views and debates that prevailed in that era

provide a useful reference point for measuring what has changed since then. Part One focuses in particular on three provocative and influential ideas of that era: first, the notion that there are inherent “limits to growth” on a planet of finite natural resources and limited ecological resilience; second, the claim that where nature is concerned, self-interested individual behavior often adds up to a collective “tragedy of the commons”; and third, the idea that environmental threats should be seen as matters of national and international security.

In Part Two we examine how the structure of the international system shapes the types of problems we face and the types of solutions we can imagine. The discussion focuses on the roles of national sovereignty, transnational capitalism, and the myriad manifestations of “globalization” in shaping political and economic institutions, patterns of environmental harm, and the possibilities for political responses. Part Two also examines environmentalism as a global social movement, investigating whether we might be seeing the emergence of different forms of political authority that challenge these dominant aspects of system structure.

Part Three examines the challenges of international cooperation and institutional reform. Here we take a tour of several of the most important practices of global environmental governance: international environmental law, multilateral environmental agreements among governments, the institutionalized practices of international environmental diplomacy, and the environmental provisions embedded in other forms of international cooperation such as trade agreements. We also look at the Paris Agreement on climate change as a specific expression of international environmental cooperation, presenting some dramatically contrasting views on its implications and prospects for efficacy.

The volume concludes with three powerful, controversial paradigms that have crystallized and given form to debate in the decades since Stockholm: sustainability (Part Four), environmental security (Part Five), and ecological justice (Part Six). For some observers, these three paradigms are complementary and potentially harmonious facets of a single vision for the planet and its people. Others see tensions and contradictions inherent in the simultaneous pursuit of development, security, and justice in world affairs. Convergent or not, they are likely to remain the conceptual building blocks for environmental initiatives of the future.

In compiling this material, we have deliberately avoided organizing the book around a conventional list of environmental “issue areas” (climate change, deforestation, toxics, water pollution, and so on) or generic types of environmental problems (such as transboundary pollution flows or problems of the global commons). To be sure, these are useful ways to organize one’s thinking about complex, multidimensional problems. However, by focusing on crosscutting themes of power, authority, and responsibility, we hope this book will provide a useful complement to these other approaches, which are already well represented in the literature.

NOTES

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2. Zoo Daqing and Zhang Peiyuan, "The Huang-Huai-Hai Plain," in B. L. Turner II, William C. Clark, Robert W. Kates, John F. Richards, Jessica T. Mathews, and William B. Meyer, eds., *The Earth as Transformed by Human Action* (New York: Cambridge University Press, 1990).

3. Peter Brimblecombe, *The Big Smoke: A History of Air Pollution in London Since Medieval Times* (London: Methuen, 1987).

4. World Health Organization, "Global Environmental Change." Available at <http://www.who.int/globalchange/environment/en/>; Food and Agriculture Organization of the United Nations, *The Future of Food and Agriculture: Trends and Challenges*. Rome: FAO, 2017.

5. Will Steffen, Paul J. Crutzen, and John R. McNeill, "The Anthropocene: Are Humans Now Overwhelming the Great Forces of Nature?" *Ambio* vol. 36 no. 8 (December 2007): 614–621.

6. This concept was formally codified in UN General Assembly Resolution 1803 of December 14, 1962.

7. See, for example, Ralph Nader, William Greider, et al. *The Case Against Free Trade* (San Francisco: Earth Island Press, 1993).

8. For an overview of the history of global environmental summitry, see Ken Conca, *An Unfinished Foundation: The United Nations and Global Environmental Governance* (New York: Oxford University Press, 2015).

9. For an early statement of the planetary paradigm, which emerged around the time of the Rio Earth Summit, see US National Academy of Sciences, *One Earth, One Future: Our Changing Global Environment* (Washington, DC: National Academy Press, 1990), especially pp. 15–19. For a discussion of the limits of environmental knowledge, emphasizing data needs and uncertainties, see United Nations Environment Programme, *Global Environmental Outlook 5* (Nairobi: UNEP, 2012), Chapter 8, available at <http://www.unep.org/geo/geo5.asp>. See also the Sustainable Development Knowledge Platform, available at <https://sustainabledevelopment.un.org>

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12. See the International Environmental Agreements (IEA) Database, available at <https://iea.uoregon.edu>

13. On the effectiveness of international environmental regimes, see Edward L. Miles, Arild Underdal, Steiner Andresen, Jørgen Wettestad, and Jon Birger Skjærseth, *Environmental Regime Effectiveness: Confronting Theory with Evidence* (Cambridge, MA: MIT Press, 2001); Oran R. Young, "The Effectiveness of International Environmental Regimes: Existing Knowledge, Cutting-edge Themes, and Research Strategies," in M. Betsill, K. Hochstetler, and D. Stevis, eds., *Advances in International Environmental Politics* (London: Palgrave Macmillan, 2014); Phillip Pattberg and Oscar Widerberg, "Theorizing Global Environmental Governance: Key Findings and Future Questions," *Millennium* vol. 43 no. 2 (2015): 684–705; and the contribution by Kanie et al. in Part Three of this volume.

14. See Conca, *An Unfinished Foundation*, Chapter 3.

15. For a wide-ranging collection of essays on the future of global environmental politics, see Simon Nicholson and Sikina Jinnah, *New Earth Politics: Essays from the Anthropocene* (Cambridge, MA: MIT Press, 2016).

16. For extensive discussion of the debate around climate, truth, skepticism, and denial, see the journal *Environmental Communication*, available at <https://www.tandfonline.com/toc/renc20/current>

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19. Barry Commoner, *The Closing Circle: Nature, Man, and Technology* (New York: Random House, 1971), pp. 148–150. See also Barry Commoner, *Making Peace with the Planet*, 5th edn. (New York: New Press, 1992).

20. Murray Bookchin, *Remaking Society: Pathways to a Green Future* (Boston, MA: South End Press, 1990), p. 9.

21. *Ibid.*, pp. 9–10.

22. On political ecology as a school of thought, see Tim Forsyth, *Critical Political Ecology: The Politics of Environmental Science* (Abingdon, UK: Routledge, 2003).

23. Vandana Shiva, "People's Ecology: The Chipko Movement," in Saul Mendlovitz and R. B. J. Walker, eds., *Towards a Just World Peace* (London: Butterworths, 1987). See also Vandana Shiva, *Ecology and the Politics of Survival: Conflicts over Natural Resources in India* (Newbury Park, CA: Sage, 1991); and Ramachandra Guha, *The Unquiet Woods: Ecological Change and Peasant Resistance in the Himalayas* (Berkeley: University of California Press, 1989).

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PART ONE

THE DEBATE BEGINS



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THE 1972 UN CONFERENCE ON THE HUMAN ENVIRONMENT, HELD IN STOCKHOLM, was a seminal event in the history of global environmental politics. Many important international agreements had already been reached by the time of the Stockholm conference, including a treaty governing Antarctica (1959), a partial nuclear-test-ban treaty (1963), a treaty governing the exploration and use of outer space (1967), and several international agreements on ocean-related matters such as whaling, the use of marine resources, and pollution. But Stockholm was the first broadly global effort to evaluate and discuss the environment in systematic, comprehensive terms, and it helped establish the trajectory of future efforts—including diplomatic initiatives, international institution building, and global movements for social change—that unfolded in the decades that followed.

Although the conference took place nearly five decades ago, many of its central debates are still with us, and several key questions asked there will appear throughout this book: Is global pollution mainly a problem of poverty or a problem of affluence? What is the balance of responsibility between the countries and societies of the North and those of the South in global environmental degradation? Does the institution of national sovereignty help or hinder the effort to construct international responses to environmental problems? An understanding of the dominant ideas and controversies at the Stockholm conference provides an essential historical perspective on the debates and disputes that dominate contemporary global environmental politics.¹

In this section we introduce some of the ideas that shaped the debate at Stockholm and in the years that followed. We pay particular attention to three powerful and controversial claims from that era: first, the idea that there are inherent “limits to growth” facing economic activity, the world’s population, and global consumption; second, the idea that self-interested individual behavior toward the environment adds up to a collective “tragedy of the commons”; and third, the claim that the environmental crisis contains the potential to catalyze international conflict and thus represents a threat to national and international security. Although thinking about each of these provocative claims has evolved considerably since Stockholm, they remain at the heart of debates about global environmental challenges.

For the industrialized countries of the North, the Stockholm conference was a response to mounting public anxiety over the environmental consequences of industrial society. By the early 1970s, concerns over problems as diverse as air and water pollution, wilderness preservation, toxic chemicals, urban congestion,

nuclear radiation, and rising prices for natural-resource commodities began to fuse into the notion that the world was rapidly approaching natural limits to growth in human activity. The best-selling book *The Limits to Growth* did much to galvanize public fears. Using a technique known as systems modeling, the authors tried to predict the consequences of unlimited growth in human numbers and consumption. As the passage presented in Chapter 1 indicates, they concluded that the convergence of several trends—accelerating industrialization, rapid population growth, widespread malnutrition, depletion of nonrenewable resources, and a deteriorating environment—was moving the world rapidly toward overall limits on global growth. To avoid a potentially catastrophic collapse of the world's economic and social systems, it would be necessary to implement restraints on growth in population and resource consumption.

The central claims of *The Limits to Growth* were highly controversial, and most governments were reluctant to embrace them. Critics argued that the book overstated the urgency of the problem, overlooked the possibility of substituting less-scarce inputs, and underestimated the possibility for technological solutions.² But the fears articulated by the book and others like it found widespread popular support in industrial societies, where they converged with the arguments of a growing coalition of environmental organizations and activists.

Not surprisingly, the idea of limits to growth was received quite differently in the global South. Among the less-industrialized countries, the idea of such limits evoked intellectual skepticism and outright suspicion. These sentiments were expressed eloquently in a 1972 essay by João Augusto de Araujo Castro (Chapter 2), the Brazilian ambassador to the United States and an influential voice in North–South diplomacy. It should be stressed that the South has never been monolithic in its views on problems of development or the environment. But as Castro made clear, many in the South linked the North's environmental concerns to the broader pattern of North–South relations. There was widespread agreement among “Third World” governments at the Stockholm conference that the North was responsible for the environmental crisis; that the North, having reaped the fruits of industrialization, now sought to close the door on the South; that the environmental problems of poverty differed fundamentally from those of affluence; and that solutions crafted with the North's problems in mind would be ineffective, or worse, if imposed on poor nations and peoples. The South's political unity at Stockholm revealed that a global response would require linking environmental efforts to development concerns and a broader dialogue about the political and economic “rules of the game” in the international system. The message was clear: if such connections were not drawn, the South would not participate.

Along with limits to growth, a second important formulation of the nature of the environmental crisis during this era was the controversial claim that we face a “tragedy of the commons.” This view was popularized by biologist Garrett Hardin in a

famous essay in the influential journal *Science* in 1968, which we excerpt in Chapter 3. According to Hardin, the “tragedy” occurred when self-interested actors enjoyed open access to, or unlimited use of, natural resources or environmental systems. Because users could benefit fully from additional exploitation while bearing only a small part of the “costs” of that exploitation (including depletion and environmental degradation), the overwhelming tendency would be for individuals seeking to maximize their own benefits to further exploit the resource. Each actor would pursue this individually logical behavior until the result for the system as a whole would be destruction or degradation of the resource in question. Individual rationality would produce collective disaster—hence the notion of tragedy. Using the example of overgrazing on the town commons of communities in medieval England, Hardin suggested that the same combination of self-interest and open access was at the root of current problems of pollution and overpopulation. He offered two stark solutions: open access could be replaced with enforceable private property rights, so that individual users would reap fully not just the benefits but also the costs of their action, and thus have an incentive to conserve their own property; or strict governmental restrictions on access could be imposed, thereby limiting overuse.

Hardin’s model came to be enormously influential in shaping thinking about global environmental problems, particularly for such so-called “global commons” as the oceans and atmosphere, which do not fall under the domain of any single government (just as the English commons was not owned by a single user). One reason for its influence is the model’s simple elegance: the tragedy of the commons combines a recognizable human motive (self-interest) with a recognizable set of social rules (those allowing open access to natural resources and the environment) to produce a result that most would recognize as undesirable (rapid depletion or destruction of the resource in question).

Along with limits to growth and the tragedy of the commons, a third powerful and controversial idea that emerged during this period was the suggestion that environmental problems constituted threats not only to human well-being but also to national and international security. Many works of this era cited the potential for violent conflict around natural resource depletion or the harmful effects of pollution. For some, this was a clear message that national-security priorities had to be realigned to deal with these new realities. Defense budgets and policies should, in this view, shift from traditional notions of war-fighting and be attuned to address these new “threats without enemies.” Chapter 4 presents an excerpt from a 1977 report of the Worldwatch Institute in which its founder, Lester Brown, stresses the need to “redefine security” in these terms. Not all who worried about emergent “eco” conflicts shared Brown’s optimism that security could be thus redefined. Indeed, another identifiable trend of thought during this period was the notion that increasingly authoritarian governance would be needed to keep environmental harm from overwhelming society.³

To many observers during the 1960s and 1970s, the limits to growth, the tragedy of the commons, and environmental (in)security combined to suggest a bleak outlook, in which mounting problems would prove intractable, threatening to business as usual, and highly conflictive. Yet, none of these ideas has gone unchallenged. Hardin's model of the tragedy of the commons, for example, is at heart just a metaphor: the English commons is invoked as a simplified representation of the complex social rules, customs, goals, and behavioral incentives that shape how people interact with the environment, individually and collectively. Whether such a "tragedy" actually lies at the center of global environmental problems depends on whether this abstraction is an accurate representation of human behavior and social institutions. Critics have noted that Hardin misread the actual history of the English commons from which he drew his metaphor. Historical reconstructions show that access to the town commons was never unrestrained but, rather, governed by a complex set of community-based rules that ensured sustainable use.⁴ The commons, in this view, was destroyed not by population growth or self-interested individual behavior, but by changing political and economic conditions in Britain, which encouraged and allowed powerful actors to privatize the commons and overwhelm community-based systems of property rights and resource governance. Rather than tragedy, the endurance of the commons system—in some cases, for hundreds of years—shows possibilities other than Hardin's stark choice between purely private property and purely open access. Similarly, the modeling behind the "limits to growth" argument examined broad, global-scale trends, but it did not model the complex behavioral and institutional dynamics shaping patterns of consumption, production, growth, and resource use. And the pessimistic eco-conflict scenarios that emerged around the same time made some assumptions—that scarcity creates grievances, and that grievances trigger conflict—which, while seemingly intuitive, greatly simplified both social responses to scarcity and the drivers of political violence.

Thus, one of the most important responses to these stark frameworks, among activists and scholars alike, has been to identify alternatives that sharpen our understanding of the *social* roots of environmental challenges and that document possibilities for doing things differently. In Chapter 5 we present two letters published in 1989 by the Coordinating Body for the Indigenous Peoples' Organizations of the Amazon Basin (COICA). In these letters, COICA frames both the problems and solutions quite differently from what we have seen thus far. COICA argued that the future of the Amazon basin and the fate of its indigenous occupants are inherently linked. The rampant quest for modernization, colonization, territorial occupation, and economic development of the Amazon basin was damaging natural ecosystems and destroying indigenous communities. But the drivers here are specific policy choices and practices, rather than abstract growth trajectories or iron laws of human behavior. And the solution is not further coercion, but rather to

recognize existing models that afford sustainable alternatives and to empower the communities that embody them.

COICA addressed the first of its protest letters to the multilateral development banks. The destruction was being driven by policies of governments in the Amazon basin, which largely excluded indigenous communities from decision making. But much of the project activity was being funded by external sources, including multinational corporations and multilateral development agencies such as the World Bank. The second letter is addressed to the international environmental movement, which is also taken to task for its lack of attention to indigenous concerns. While acknowledging the efforts of environmentalists and the potential for common cause between the environmental and indigenous peoples' movements, the letter points out that governments, international organizations, and Northern environmental groups have struck bargains that leave out the people most directly and immediately affected. As COICA noted, decisions about the fate of the Amazon forest and its people, whether made at the national or the international level, were excluding those most directly affected—not only rendering them unjust but also giving them little prospect for success.

Around the same time that COICA published its letters, the Brazilian activist Chico Mendes was assassinated by cattle ranchers in the western Brazilian state of Acre. Mendes's life and death remind us that environmentalism around the world has historically drawn most of its energy from the grassroots. Despite the growing internationalization of environmental responses, domestic political struggles have remained the most important pathway to change. Mendes was a labor activist and environmentalist who led the fight for preservation of both the Amazon forest and the sustainable livelihoods of its occupants. Mendes advocated a brand of environmentalism that struggled as much against the oppression of people as against the destruction of nature. He was murdered for his efforts to organize rural workers in the region against deforestation. The powerful vision and courage he exhibited made him an important political leader of the forest peoples' movement in Brazil during his life, and a martyr and international symbol after his death.⁵ Like COICA, Mendes reminds us of some important themes: that there are people working to live sustainably and equitably, rather than accepting some ironclad logic of a tragedy of the commons; that broad trends in resource extraction, technology, and environmental transformation are driven by specific policies and choices; and that the risk of conflict and violence may not simply be a matter of "national security" driven by scarcity, but also reside in the conflicts among interest groups and the injustices of political or cultural repression.

Such stories from activists give us a more nuanced view of growth and its limits, of the commons and its prospects, and of scarcity and its discontents. So, too, has social-science research in the years since the Stockholm conference deepened our understanding of both drivers and responses. Some of the most important work

in this regard challenges the inevitability of Hardin's tragedy of the commons.⁶ A wide range of contemporary natural-resource and environmental systems, often referred to as "common-pool resources", are in theory subject to the "tragedy", including fisheries, wildlife populations, water supplies, rangelands, meadows, and forests. Elinor Ostrom's influential book *Governing the Commons*, published in 1990, provided both theory and evidence that self-organizing, sustainable management of such shared resources is possible under certain conditions.⁷ Ostrom's seminal work spawned a large and diverse research effort, and garnered her the 2009 Nobel Prize in economics (despite being a political scientist!). Much of this subsequent work, like Ostrom's, has found that whether a "tragedy" of overconsumption ensues or not depends on the type of social rules governing these resource systems. The enforceable private property model Hardin advocated is just one such set of rules, and not necessarily the most appropriate for all situations. Indeed, given the large variation in resources, patterns of use, and social relations among users, researchers agree that no single institutional design or set of rules will work in all common-pool situations. Nevertheless, we can formulate general principles about the conditions that seem to increase the prospects for sustainable resource use. Chapter 6 presents an excerpt from an essay by Ostrom and her colleague Xavier Basurto which summarizes several of the most important insights from this work.

A critically important question is the applicability of this work to international responses to environmental problems. If Hardin's tragedy does apply to the global commons of oceans or atmosphere, it will be exceedingly difficult to craft effective responses to global environmental problems in these domains. Both of Hardin's preferred solutions—privatizing the commons or subjecting it to the control of a powerful central authority—are infeasible for these global-scale systems, at least within the current international system. However, if Ostrom and others are correct that systems of collective management developed by the resource users themselves can be effective on the local or regional level, then it may also be possible to design such systems to operate on the international level.⁸ Indeed, one can view treaty negotiations among countries as just such an effort. If so, there may still be a tragic outcome for the commons—but it would result from our lack of skill and effectiveness in designing fair and efficient responses, not from the inevitability of circumstances as inferred by Hardin.

While some scholars, activists and policy makers have been busy trying to find an escape route from Hardin's tragedy, others have applied similarly critical lenses to the inevitability of limits to growth or a world of eco-conflicts. On the environmental implications of growth, which split North and South at Stockholm, the key bridging element has been the concept of sustainability, which we discuss in detail in Part Four. On conflict, the idea of environmental peacebuilding has argued that environmental challenges can be ways to enhance and strengthen peace rather than

simply threaten it. While not as widely influential as Ostrom's rebuttal of Hardin or the concept of sustainability, environmental peacebuilding has begun to shape work at the United Nations and among civil-society organizations, as we illustrate with chapters in Part Five.

Despite their critics, and despite changes in our understanding since the Stockholm era, the concepts of limits to growth, the tragedy of the commons, and environmental (in)security remain powerfully influential. Those who are skeptical about (or would seek to undermine) effective international cooperation invoke the logic of self-interested behavior—just as Hardin did more than 50 years ago. The increasingly widespread fear that climate change threatens national and international security raises the same debates about eco-conflict, geopolitical maneuvering, and authoritarian responses seen at Stockholm. The evolution of global environmental politics cannot be understood without examining the history of these ideas. Weighing their claims, carefully and critically, is as important today as it was when they first emerged.

Thinking Critically

1. How well have the essays by Meadows, Castro, and Hardin, which were all written between 1968 and 1972, withstood the test of time? Do they still provide an adequate framework for understanding and addressing global environmental problems? What aspects of their essays seem anachronistic? What aspects ring true today? Imagine what a dialogue among these thinkers would be like if they were to meet today and discuss the durability of one another's claims.
2. Contrast Castro's claims about the environment and development with the views of the World Commission on Environment and Development (WCED) and the essays on sustainability in Part Four. Do either the advocates or the critics of the sustainability paradigm frame the problem in the same way as Castro?
3. Does the work of Ostrom and her colleagues invalidate Hardin's central claims about the tragedy of the commons? In other words, can Hardin still be right about the larger problem even if he misread the history of the English commons, and even if exceptions to his pessimistic scenario can be found today? What do you think Hardin would say to his critics? Construct Hardin's argument as a series of logical propositions: If Basurto and Ostrom are correct, which of Hardin's specific claims or assumptions are most challenged, and how?
4. Can we imagine effective rules governing common-pool resources on a larger scale—for example, the global atmosphere or the world's oceans?

What are the limits of scale for these forms of governance, and at what scale are these limits likely to be encountered?

5. Contrast Hardin's arguments about the need for strong command-and-control governance with the essays on ecological justice in Part Six. Is the concentration of power in the hands of the state part of the problem or part of the solution? In an era in which many governments face profound skepticism and frequent crises of authority, are people likely to look to the state for solutions to environmental problems?

NOTES

1. For an overview of events leading up to and including the Stockholm conference, see Lynton Caldwell, *International Environmental Policy: From the Twentieth to the Twenty-first Century*, 3rd edn. (Durham, NC: Duke University Press, 2012).

2. Several of these criticisms are summarized in W. D. Nordhaus, "World Dynamics: Measurement Without Data," *Economic Journal* vol. 83 no. 332 (December 1973): 1156–1183. See also Julian Simon and Herman Kahn, *The Resourceful Earth* (Oxford: Basil Blackwell, 1984).

3. An example is William Ophuls, *Ecology and the Politics of Scarcity* (San Francisco: W. H. Freeman, 1977).

4. See Susan Jane Buck Cox, "No Tragedy on the Commons," *Environmental Ethics* 7 (Spring 1985): 49–61.

5. On the international pressures surrounding deforestation in the Amazon, see Susanna Hecht and Alexander Cockburn, *The Fate of the Forest: Developers, Destroyers, and Defenders of the Amazon* (New York: HarperCollins, 1990).

6. Much of this research is summarized in Nives Dolšak and Elinor Ostrom, *The Commons in the New Millennium: Challenges and Adaptation* (Cambridge, MA: MIT Press, 2003).

7. See Elinor Ostrom, *Governing the Commons: The Evolution of Institutions for Collective Action* (London: Cambridge University Press, 1990).

8. See Robert O. Keohane and Elinor Ostrom, eds., *Local Commons and Global Interdependence* (London: Sage, 1995).

THE LIMITS TO GROWTH

DONELLA H. MEADOWS, DENNIS L. MEADOWS, JØRGEN
RANDERS, AND WILLIAM W. BEHRENS III^{*1}

Problems and Models

Every person approaches his problems . . . with the help of models. A model is simply an ordered set of assumptions about a complex system. It is an attempt to understand some aspect of the infinitely varied world by selecting from perceptions and past experience a set of general observations applicable to the problem at hand. . . .

Decisionmakers at every level unconsciously use mental models to choose among policies that will shape our future world. These mental models are, of necessity, very simple when compared with the reality from which they are abstracted. The human brain, remarkable as it is, can only keep track of a limited number of the complicated, simultaneous interactions that determine the nature of the real world.

We, too, have used a model. Ours is a formal, written model of the world.² It constitutes a preliminary attempt to improve our mental models of long-term, global problems by combining the large amount of information that is already in human minds and in written records with the new information-processing tools that mankind's increasing knowledge has produced—the scientific method, systems analysis, and the modern computer.

^{*}Excerpted from Donella H. Meadows, Dennis L. Meadows, Jørgen Randers, and William W. Behrens III, *The Limits to Growth* (Washington, DC: Potomac Associates, 1972). The text is currently available in its third edition, Meadows et al., *The Limits to Growth: The 30-Year Update* (White River Junction, VT: Chelsea Green Publishing Co., 2004). <https://www.chelseagreen.com/product/limits-to-growth/> Reprinted with permission.

Our world model was built specifically to investigate five major trends of global concern—accelerating industrialization, rapid population growth, widespread malnutrition, depletion of nonrenewable resources, and a deteriorating environment. These trends are all interconnected in many ways, and their development is measured in decades or centuries, rather than in months or years. With the model we are seeking to understand the causes of these trends, their interrelationships, and their implications as much as one hundred years in the future.

The model we have constructed is, like every other model, imperfect, oversimplified, and unfinished. We are well aware of its shortcomings, but we believe that it is the most useful model now available for dealing with problems far out on the space-time graph. To our knowledge it is the only formal model in existence that is truly global in scope, that has a time horizon longer than thirty years, and that includes important variables such as population, food production, and pollution, not as independent entities, but as dynamically interacting elements, as they are in the real world. . . .

In spite of the preliminary state of our work, we believe it is important to publish the model and our findings now. Decisions are being made every day, in every part of the world, that will affect the physical, economic, and social conditions of the world system for decades to come. These decisions cannot wait for perfect models and total understanding. They will be made on the basis of some model, mental or written, in any case. . . .

Our conclusions are:

1. If the present growth trends in world population, industrialization, pollution, food production, and resource depletion continue unchanged, the limits to growth on this planet will be reached sometime within the next one hundred years. The most probable result will be a rather sudden and uncontrollable decline in both population and industrial capacity.
2. It is possible to alter these growth trends and to establish a condition of ecological and economic stability that is sustainable far into the future. The state of global equilibrium could be designed so that the basic material needs of each person on earth are satisfied and each person has an equal opportunity to realize his individual human potential.
3. If the world's people decide to strive for this second outcome rather than the first, the sooner they begin working to attain it, the greater will be their chances of success.

These conclusions are so far-reaching and raise so many questions for further study that we are quite frankly overwhelmed by the enormity of the job that must be done. We hope that this book will serve to interest other people . . . to raise the space and time horizons of their concerns and to join us in understanding and preparing for a period of great transition—the transition from growth to global equilibrium. . . .

A Finite World

We have mentioned many difficult trade-offs . . . in the production of food, in the consumption of resources, and in the generation and clean-up of pollution. By now it should be clear that all of these trade-offs arise from one simple fact—the earth is finite. The closer any human activity comes to the limit of the earth's ability to support that activity, the more apparent and unresolvable the trade-offs become. When there is plenty of unused arable land, there can be more people and also more food per person. When all the land is already used, the trade-off between more people or more food per person becomes a choice between absolutes.

In general, modern society has not learned to recognize and deal with these trade-offs. The apparent goal of the present world system is to produce more people with more (food, material goods, clean air, and water) for each person. . . . We have noted that if society continues to strive for that goal, it will eventually reach one of many earthly limitations. . . . It is not possible to foretell exactly which limitation will occur first or what the consequences will be, because there are many conceivable, unpredictable human responses to such a situation. It is possible, however, to investigate what conditions and what changes in the world system might lead society to collision with or accommodation to the limits to growth in a finite world. . . .

Technology and the Limits to Growth

Although the history of human effort contains numerous incidents of mankind's failure to live within physical limits, it is success in overcoming limits that forms the cultural tradition of many dominant people in today's world. Over the past three hundred years, mankind has compiled an impressive record of pushing back the apparent limits to population and economic growth by a series of spectacular technological advances. Since the recent history of a large part of human society has been so continuously successful, it is quite natural that many people expect technological breakthroughs to go on raising physical ceilings indefinitely. These people speak about the future with resounding technological optimism. . . . The hopes of the technological optimists center on the ability of technology to remove or extend the limits to growth of population and capital. We have shown that in the world model the application of technology to apparent problems of resource depletion or pollution or food shortage has no impact on the essential problem, which is exponential growth in a finite and complex system. Our attempts to use even the most optimistic estimates of the benefits of technology in the model did not prevent the ultimate decline of population and industry, and in fact did not in any case postpone the collapse beyond the year 2200. . . .

Applying technology to the natural pressures that the environment exerts against any growth process has been so successful in the past that a whole culture has

evolved around the principle of fighting against limits rather than learning to live with them. . . . But the relationship between the earth's limits and man's activities is changing. The exponential growth curves are adding millions of people and billions of tons of pollutants to the ecosystem each year. Even the ocean, which once appeared virtually inexhaustible, is losing species after species of its commercially useful animals. . . .

There may be much disagreement with the statement that population and capital growth must stop soon. But virtually no one will argue that material growth on this planet can go on forever. . . . Man can still choose his limits and stop when he pleases by weakening some of the strong pressures that cause capital and population growth, or by instituting counterpressures, or both. Such counterpressures will probably not be entirely pleasant. They will certainly involve profound changes in the social and economic structures that have been deeply impressed into human culture by centuries of growth. The alternative is to wait until the price of technology becomes more than society can pay, or until the side effects of technology suppress growth themselves, or until problems arise that have no technical solutions. At any of those points the choice of limits will be gone. Growth will be stopped by pressures that are not of human choosing, and that, as the world model suggests, may be very much worse than those which society might choose for itself.

. . . Technological optimism is the most common and the most dangerous reaction to our findings from the world model. Technology can relieve the symptoms of a problem without affecting the underlying causes. Faith in technology as the ultimate solution to all problems can thus divert our attention from the most fundamental problem—the problem of growth in a finite system—and prevent us from taking effective action to solve it. . . .

The Transition from Growth to Global Equilibrium

We can say very little at this point about the practical, day-by-day steps that might be taken to reach a desirable, sustainable state of global equilibrium. Neither the world model nor our own thoughts have been developed in sufficient detail to understand all the implications of the transition from growth to equilibrium. Before any part of the world's society embarks deliberately on such a transition, there must be much more discussion, more extensive analysis, and many new ideas contributed by many different people. . . .

Although we underline the need for more study and discussion of these difficult questions, we end on a note of urgency. We hope that intensive study and debate will proceed simultaneously with an ongoing program of action. The details are not yet specified, but the general direction for action is obvious. Enough is known already to analyze many proposed policies in terms of their tendencies to promote or to

regulate growth.² . . . Efforts are weak at the moment, but they could be strengthened very quickly if the goal of equilibrium were recognized as desirable and important by any sizable part of human society. . . .

Taking no action to solve these problems is equivalent to taking strong action. Every day of continued exponential growth brings the world system closer to the ultimate limits to that growth. A decision to do nothing is a decision to increase the risk of collapse. We cannot say with certainty how much longer mankind can postpone initiating deliberate control of his growth before he will have lost the chance for control. We suspect on the basis of present knowledge of the physical constraints of the planet that the growth phase cannot continue for another one hundred years. Again, because of the delays in the system, if the global society waits until those constraints are unmistakably apparent, it will have waited too long.

If there is cause for deep concern, there is also cause for hope. Deliberately limiting growth would be difficult, but not impossible. The way to proceed is clear, and the necessary steps, although they are new ones for human society, are well within human capabilities. Man possesses, for a small moment in his history, the most powerful combination of knowledge, tools, and resources the world has ever known. He has all that is physically necessary to create a totally new form of human society—one that would be built to last for generations. The two missing ingredients are a realistic, long-term goal that can guide mankind to the equilibrium society and the human will to achieve that goal. Without such a goal and a commitment to it, short-term concerns will generate the exponential growth that drives the world system toward the limits of the earth and ultimate collapse. With that goal and that commitment mankind would be ready now to begin a controlled, orderly transition from growth to global equilibrium.

NOTES

1. The prototype model on which we have based our work was designed by Professor Jay W. Forrester of the Massachusetts Institute of Technology. A description of that model has been published in his book *World Dynamics* (Cambridge, Mass: Wright-Allen Press, 1971).

2. See, for example, "Fellow Americans Keep Out!" *Forbes*, June 15, 1971, p. 22, and *The Ecologist*, January 1972.

ENVIRONMENT AND DEVELOPMENT: THE CASE OF THE DEVELOPING COUNTRIES

JOÃO AUGUSTO DE ARAUJO CASTRO*

Introduction

Interest in the field of ecology, which is centered in the developed countries, has recently increased due to the sudden discovery of a possible imbalance between man and earth. Resulting from the population explosion and the misuse of existing and newly developed technologies, this potential imbalance could bring about an environmental crisis menacing the future of mankind. In several countries the emergence of an interest in ecological problems has not been confined to the realm of the scientific community. It has aroused public concern which has expressed itself, although sometimes vaguely, in such initiatives as Earth Week, celebrated in the United States in April 1970, and the mushrooming of a specialized literature.

As would be expected, the methods envisaged to resolve on a world basis the so-called environmental crisis were inspired by the realities of a fraction of that very same world: the family of the developed countries. Furthermore, the bulk of the solutions in hand, mainly of a technical nature, seek primarily to make healthier the consequences of the Industrial Revolution without necessarily providing a tool for a further distribution of its benefits among states.

*Kay, David A., and Eugene B. Skolnikoff, eds., *World Eco-Crisis: International Organizations in Response*. © 1972 by the Board of Regents of the University of Wisconsin System. Reprinted by permission of The University of Wisconsin Press.

This study seeks to introduce some neglected aspects of the interests of developing countries into discussions about a world ecological policy. The working hypothesis is that the implementation of any worldwide environmental policy based on the realities of the developed countries tends to perpetuate the existing gap in socioeconomic development between developed and developing countries and so promote the freezing of the present international order. . . .

Developed Countries

Although there does not yet exist a systematic body of doctrine, the new ecological policy of the developed countries contains several elements that have already stimulated important developments in academic thought, as indicated by the growing literature on the matter, and attitudes of governments and private sectors in these countries, mainly in their relations with the developing countries.

A short historical digression may help in analyzing the rationale of this ecological policy. As a localized phenomenon in the countries of the Northern Hemisphere, the Industrial Revolution of the eighteenth century was not brought about by one single factor. It was not, for instance, the result of inventions or the coming into operation of new machines. As in the case of other major movements in history, it was the result of the interplay of many factors, some obscure in themselves, whose combined effort laid down the foundations of a new industrial system. Growing organically, cell by cell, new patterns of industrial organization were soon translated into the establishment of a new international order. Around the group of countries enjoying the benefits of the Industrial Revolution, there existed an increasing family of countries, trying, mostly unsuccessfully, to modernize their own means of production.

This new international order and the relatively uneven distribution of political power among states, based on the use and monopoly of advanced technologies, may be considered one of the most enduring effects of the Industrial Revolution. And since then, as a normal corollary of the new order, the technologically advanced countries have been endeavoring to maintain their political and economic position in the world while the technologically less endowed countries have been seeking to alter, through development, this global status quo.

This permanent struggle between the two groups of countries persists in the present days and it is unlikely that it will cease in the near future. For this to happen one would have to assume a perfectly homogeneous world community whose conflicts would have been eliminated through a perfect satisfaction, on a homogeneous basis, of all human needs. This condition is most likely to be found only in the realms of utopia. . . .

According to a helpful image taken from academic and governmental sources in the developed countries our planet could be visualized as a "spaceship earth,"

where life could only be sustained, nay simply possible, through maintenance of a delicate equilibrium between the needs of the passengers and the ability of the craft to respond to those needs. Undisturbed until recently, this equilibrium would now be menaced by an excess of population and the consequences of the use of both previously existing and newly developed technologies. Elaborating the same image, "spaceship earth" would be divided into two classes of passengers, the first coincident with the technologically advanced countries and the second representative of the technologically less endowed countries, which would necessarily have to trade off positions with a view to maintaining the equilibrium of the vessel. . . .

In order to maintain the equilibrium of the vessel the problems created by population explosion and the use of both previously existing and new technologies should, in the view of developed countries, now be dealt with globally, irrespective of the unequal distribution, on a world scale, of the benefits and related destructive effects on the environment engendered by the Industrial Revolution. Germane to such a global ecological policy is the need for world planning for development which, to be successful, might purposely aim at freezing the present relative positions of the two classes inside the vessel.

Provided that the first class already enjoys low average rates of population growth and is unlikely to opt for a slower rate of industrial growth for the sole purpose of guaranteeing a purer atmosphere or cleaner water, the new ecology-saving policy would be more successful if applied in the areas where the environmental crisis has not yet appeared, even in its least acute forms. Actually, these areas would mainly comprise the territory of the second class. Thus: the second class should be taught to employ the most effective and expeditious birth control methods and to follow an orderly pollution-reducing process of industrialization. In the case of industrialization, the mainstream of socioeconomic development, the lesson must be even harsher: The second class must organize production in accordance with environment-saving techniques already tested by the first class or be doomed to socioeconomic stagnation. . . .

Nowadays some ecologists do not hesitate to say that the developing countries can never hope to achieve the consumption patterns of the developed countries. Some seemingly appalling calculations are offered as proof of this. To raise the living standards of the world's existing population to American levels the annual production of iron would have to increase 75 times, that of copper 100 times, that of lead 200 times, and that of tin 250 times. Were a country such as India to make use of fertilizers at the per capita level of the Netherlands, it would consume one-half of the world's total output of fertilizers. Clearly, the parity of the developing countries with the developed ones is no longer compatible with the existing stocks of natural resources. Again, according to those wise men, the increasing expectations in developing countries, which are sometimes associated with something approaching a revolution, are nothing more than expectations of elites and therefore must be curbed. Most of the population of these countries, it is claimed, do not have an

ambition to reach Western standards and do not even know that "such a thing as development is on the agenda."

Now, the alleged exhaustion of natural resources is accompanied, in general, by forecasts of the fateful coming of formidable ecological hecatombs. The continuing progress of developed countries would require an economic lebensraum in the Southern Hemisphere. In the name of the survival of mankind developing countries should continue in a state of underdevelopment because if the evils of industrialization were to reach them, life on the planet would be placed in jeopardy. . . .

Very few reasonable people underwrite these fanciful ideas. Yet, it cannot be denied that the environment in developed countries is threatened and that it should be preserved. The difficulty in dealing with environmental problems nowadays is that they have become a myth. . . . From an uttermost neglect of ecological problems public opinion in the United States has swung to an outright "geolatry." The environment has been rediscovered and Mother Earth now has a week dedicated to her in the calendar. Schoolchildren crusade to clean up the streets; college students organize huge demonstrations; uncivilized industries that dump their wastes in the air, in the water, or on the ground are denounced as public enemies.

. . . The simplistic concepts that ecology is disturbed because there are "too many people" or because they "consume too much" must be discarded as nothing more than fallacies. There is abundant evidence that the earth is capable of supporting a considerably greater population at much higher levels of consumption. The simple fact that in half a century mankind found it possible to wage four major wars, with a terrible waste of wealth, is a clear indication that we are not after all so short of resources although we may be short of common sense. . . .

Environmental problems not only pose a new and compelling argument for disarmament and peace but also call attention to the question of efficiency in the organization of production. It is widely known, but seldom remembered when the availability of natural resources is discussed, that in developed countries billions of dollars are spent every year to purchase so-called farm surpluses. Millions of tons of agricultural products have been regularly stored or destroyed to keep prices up in the world markets. . . . These figures and these facts evidently do not agree with the superficial statements which have been made about the irreparable strain being put on natural resources.

Pollution of the air and water and related damages to the environment are loosely attributed, in general, to faulty technologies, but few have bothered to assess objectively the exact proportions of the problem. According to experts at the Organisation for Economic Co-operation and Development (OECD) safeguarding the environment in the United States would require annual expenditures of . . . less than 2 percent of the American GNP [Gross National Product]. Clearly, there is no real cause for most of the fuzzy agitation about the environment. Put in their proper perspective, environmental problems are little more than a question of the reexamination of national priorities. . . .

When discussing the environment some ecologists and other wise men, as often happens in many other instances, try haphazardly to superimpose peculiar situations prevailing in developed countries onto the realities of the developing countries. . . . If the peculiarities of developing countries are taken into account, it will not be difficult to recognize that, in broad terms, they are still at a pre-pollution stage or, in other words, have not yet been given the chance to become polluted. . . . The 24 countries of Latin America, the least underdeveloped region in the developing world, have less than one-tenth of the total number of motor vehicles in the United States. Only a few ecologists and other wise men would say that Latin Americans should rather have fewer cars and cleaner air.

There is a pollution of affluence and a pollution of poverty. It is imperative to distinguish between the two lest some pollution be prevented at the cost of much economic development. Were it not for the dangers arising from the confusion between the two kinds of pollution, there would be no need for calling attention to the precarious housing conditions, poor health, and low sanitary standards not to mention starvation in developing countries. The linear transposition of ecological problems of the developed countries to the context of the developing ones disregards the existence of such distressing social conditions. Wherever these conditions prevail, the assertion that income means less pollution is nonsense. It is obvious, or should be, that the so-called pollution of poverty can only be corrected through higher incomes, or more precisely, through economic development.

The most sensible ecologists are of the opinion that the pollution levels can be attributed not so much to population or affluence as to modern technologies. In the United States the economy would have grown enough, in the absence of technological change, to give the increased population about the same per capita amounts of goods and services today as in 1946. The ecological crisis has resulted mainly from the sweeping progress in technologies. Modern technologies have multiplied the impact of growth on the environment and, consequently, generated most of the existing pollution. Those who haphazardly transpose developed countries' situations to the milieu of an underdeveloped country repeatedly warn the latter against the dangers of modern technologies and rapid industrialization. "Don't let happen to your cities what happened to New York; keep your beautiful landscapes." It is ironic that developed countries, which create and sell modern technologies, should caution developing countries against utilizing them. Is this done to justify the secondhand technologies that sometimes accompany foreign direct investments?

Developing Countries

A somewhat apathetic attitude on the part of the developing countries regarding the environmental issue does not imply negation of the relevance of the matter

and the need for true international cooperation to solve the problem it poses for the survival of mankind. This apathetic attitude, however, clearly is derived from the developing countries' socioeconomic experience which differs, to a large extent, from that of the developed countries. Consequently, one has to bear in mind that, not having enjoyed the opportunity to experience their own Industrial Revolution, the developing countries have not been stimulated to think about the environmental crisis as posed in the present days. The phenomenon of urbanization in the Southern Hemisphere, even in the countries experiencing a considerable degree of progress, may raise questions about poor living standards in some areas but has not thus far led to industrial congestion.

As indicated in the elements of the ecological policy of the developed countries, the equilibrium of "spaceship earth" would depend on the enforcement of measures bearing on population and on the use of the previously existing and new technologies chiefly in the second class of the vessel or, in other words, in the territory of the developing countries. Even if applied to their full extent, those measures would not result at some foreseeable date in a single-class carrying vessel, preferably closer to the first steerage. This ecological policy, which aims primarily at the equilibrium of the vessel, could better succeed if the relative positions of the classes were maintained, for the emergence of one single class would presuppose a considerable change in the living standards of the first class, something that may not be attained in the light of present global socioeconomic realities. . . .

On the question of the preservation of the environment the passengers' survival would call for the enforcement of a drastic decision, globally applied, to maintain a "green area reserve" which would have to coincide mainly with the territories of the developing countries. This step would safeguard, against complete exhaustion, the natural elements (soil, atmosphere, and water) still available on the planet just to provide some sort of counteraction to the spoilage of the same natural elements used up in the countries where the benefits of the Industrial Revolution were massively concentrated.

Besides the ethical question raised by this policy, as expressed in the ostensive imbalance between responsibility for the damage and obligation for repair, the developing countries, in abiding by its prescriptions, would make a commitment to conservatism rather than to conservation. Furthermore, the possibility of a widespread application of developed countries' ecological policy, theoretically conceived to secure the equilibrium of "spaceship earth," may risk transforming the Southern Hemisphere countries into the last healthy weekend areas for the inhabitants of a planet already saturated with the environment created by the Industrial Revolution. As a token of compensation the Southern Hemisphere countries could claim to have resurrected, and adequately preserved, the environmental milieu for the living and the survival of Rousseau's "happy savage." In expressing their concern over the environmental crisis the developing countries cannot accept, without

further refinement, the ecological policy devised by the developed countries whose socioeconomic structure was deeply influenced by the unique phenomenon of the Industrial Revolution.

The first step toward the refinement of that policy may be the rejection of the principle that the ecology issue, taken on a global basis, can be dealt with exclusively through a technical approach, as suggested by the developed countries. Given the implications for the international order, including the freezing of the status quo, any environment-saving policy must necessarily be imbued with a solid and well-informed political approach. This would provide an opportunity for the developing countries, by preserving their national identities, to join safely in the effort of the international community to preserve the equilibrium of "spaceship earth."

As a normal corollary of the political approach, ecological policy should not depart from the broader framework of socioeconomic development. In this regard a second step of refinement would require a corresponding universal commitment to development if the task of preserving the environment is to be shared by the world community. . . .

Evidently, no country wants any pollution at all. But each country must evolve its own development plans, exploit its own resources as it thinks suitable, and define its own environmental standards. The idea of having such priorities and standards imposed on individual countries or groups of countries, on either a multilateral or a bilateral basis, is very hard to accept.

That is why it is disturbing to see the International Bank for Reconstruction and Development (IBRD) set up its own ecological policy. Repercussions on the environment, defined according to IBRD ecologists, have become an important factor in determining whether financial assistance by that institution should be granted for an industrial project in developing countries. It seems reasonable that the preservation of the environment should not exclude the preservation of national sovereignty. Ecological policies should rather be inserted into the framework of national development.

It is perhaps time for the developing countries to present their own views on the framing of an environmental policy in spite of the fact that the developed countries have not yet ended their own controversial debate or furnished definite and convincing data on the issue. In adopting a position the developing countries recognize the existence of environmental problems in the world and the possibility of finding solutions through both national efforts and international cooperation.

The first point to be touched on concerns the question of national sovereignty. In this regard any ecological policy, globally applied, must not be an instrument to suppress wholly or in part the legitimate right of any country to decide about its own affairs. In reality this point would simply seek to guarantee on an operational

level the full exercise of the principle of juridical equality of states as expressed, for instance, in the Charter of the United Nations. . . . Sovereignty, in this context, should not be taken as an excuse for isolationism and consequently for escapism in relation to international efforts geared to solving environmental problems. For the developing countries it is crucial to consider, in the light of their own interests, nationally defined, the whole range of alternative solutions devised or implemented in the developed countries. Naturally, it is assumed that all countries can act responsibly and that none is going to deliberately favor policies that may endanger the equilibrium of "spaceship earth."

Closely linked to the problem of sovereignty, the question of national priorities calls for an understanding of the distinction between the developmental characteristics of developed and developing countries. As has been previously pointed out in this article, while the ecological issue came to the forefront of public concern as a by-product of postindustrial stages of development, it is not yet strikingly apparent in the majority of the developing countries. And different realities, of course, should be differently treated or, at least, given the fittest solutions.

In the developing countries the major concern is an urgent need to accelerate socioeconomic development, and a meaningful ecological policy must not hamper the attainment of that goal in the most expeditious way. . . . In this context the developing countries, while rejecting the implementation of any ecological policy which bears in itself elements of socioeconomic stagnation, could only share a common responsibility for the preservation of the environment if it was accompanied and paralleled by a corresponding common responsibility for development. . . .

Conclusion

This study has probed very briefly some aspects of an ecological policy in the light of the interests of the developing countries. . . . Emphasis has been laid on the undesirability of transposing, uncritically, into the realities of the developing countries the solutions already envisaged by the developed countries to eliminate or reduce the so-called environmental crisis to the extent that those solutions may embody elements of socioeconomic stagnation. . . . Finally, a preliminary and broad picture of a position of the developing countries has stressed the relation between preservation of environment and the urgent need to speed up socioeconomic development and the desirability of a common world effort to tackle both these aspects simultaneously. This common effort, however, should not preclude or trespass on national interest as a departing point for the setting up of concepts and operational guidelines of an ecological policy for the developing countries.

In conclusion, a discussion of any meaningful ecological policy for both developed and developing countries . . . would better reflect a broad socioeconomic concern, as tentatively suggested in this article, rather than confine itself to a strictly scientific approach. Man's conceptual environment, and nothing else, will certainly prevail in shaping the future of mankind, for the preservation of the environment presupposes a human being to live in it and a human mind to conceive a better life for man on this planet. From the point of view of man—and we have no other standpoint—Man, Pascal's "roseau pensant," is still more relevant than Nature.

THE TRAGEDY OF THE COMMONS

GARRETT HARDIN*

Tragedy of Freedom in a Commons

. . . The tragedy of the commons develops in this way. Picture a pasture open to all. It is to be expected that each herdsman will try to keep as many cattle as possible on the commons. Such an arrangement may work reasonably satisfactorily for centuries because tribal wars, poaching, and disease keep the numbers of both man and beast well below the carrying capacity of the land. Finally, however, comes the day of reckoning, that is, the day when the long-desired goal of social stability becomes a reality. At this point, the inherent logic of the commons remorselessly generates tragedy.

As a rational being, each herdsman seeks to maximize his gain. Explicitly or implicitly, more or less consciously, he asks, "What is the utility to me of adding one more animal to my herd?" This utility has one negative and one positive component.

1. The positive component is a function of the increment of one animal. Since the herdsman receives all the proceeds from the sale of the additional animal, the positive utility is nearly +1.
2. The negative component is a function of the additional overgrazing created by one more animal. Since, however, the effects of overgrazing are shared by all the herdsmen, the negative utility for any particular decisionmaking herdsman is only a fraction of -1.

*Excerpted from Garrett Hardin, "The Tragedy of the Commons," *Science* 162 (December 13, 1968): 1243-1248. Reprinted with permission.

Adding together the component partial utilities, the rational herdsman concludes that the only sensible course for him to pursue is to add another animal to his herd. And another; and another. . . . But this is the conclusion reached by each and every rational herdsman sharing a commons. Therein is the tragedy. Each man is locked into a system that compels him to increase his herd without limit—in a world that is limited. Ruin is the destination toward which all men rush, each pursuing his own best interest in a society that believes in the freedom of the commons. Freedom in a commons brings ruin to all.

Some would say that this is a platitude. Would that it were! In a sense, it was learned thousands of years ago, but natural selection favors the forces of psychological denial.¹ The individual benefits as an individual from his ability to deny the truth even though society as a whole, of which he is a part, suffers. Education can counteract the natural tendency to do the wrong thing, but the inexorable succession of generations requires that the basis for this knowledge be constantly refreshed. . . .

In an approximate way, the logic of the commons has been understood for a long time, perhaps since the discovery of agriculture or the invention of private property in real estate. But it is understood mostly only in special cases which are not sufficiently generalized. Even at this late date, cattlemen leasing national land on the western ranges demonstrate no more than an ambivalent understanding, in constantly pressuring federal authorities to increase the head count to the point where overgrazing produces erosion and weed dominance. Likewise, the oceans of the world continue to suffer from the survival of the philosophy of the commons. Maritime nations still respond automatically to the shibboleth of the “freedom of the seas.” Professing to believe in the “inexhaustible resources of the oceans,” they bring species after species of fish and whales closer to extinction.² The National Parks present another instance of the working out of the tragedy of the commons. At present, they are open to all, without limit. The parks themselves are limited in extent—there is only one Yosemite Valley—whereas the population seems to grow without limit. The values that visitors seek in the parks are steadily eroded. Plainly, we must soon cease to treat the parks as commons or they will be of no value to anyone.

What shall we do? We have several options. We might sell them off as private property. We might keep them as public property, but allocate the right to enter them. The allocation might be on the basis of wealth, by the use of an auction system. It might be on the basis of merit, as defined by some agreed-upon standards. It might be by lottery. Or it might be on a first-come, first-served basis, administered to long queues. These, I think, are all the reasonable possibilities. They are all objectionable. But we must choose—or acquiesce in the destruction of the commons that we call our National Parks.

Pollution

In a reverse way, the tragedy of the commons reappears in problems of pollution. Here it is not a question of taking something out of the commons, but of putting something in—sewage, or chemical, radioactive, and heat wastes into water; noxious and dangerous fumes into the air; and distracting and unpleasant advertising signs into the line of sight. The calculations of utility are much the same as before. The rational man finds that his share of the cost of the wastes he discharges into the commons is less than the cost of purifying his wastes before releasing them. Since this is true for everyone, we are locked into a system of “fouling our own nest,” so long as we behave only as independent, rational, free-enterprisers.

The tragedy of the commons as a food basket is averted by private property, or something formally like it. But the air and waters surrounding us cannot readily be fenced, and so the tragedy of the commons as a cesspool must be prevented by different means, by coercive laws or taxing devices that make it cheaper for the polluter to treat his pollutants than to discharge them untreated. We have not progressed as far with the solution of this problem as we have with the first. Indeed, our particular concept of private property, which deters us from exhausting the positive resources of the earth, favors pollution. The owner of a factory on the bank of a stream—whose property extends to the middle of the stream—often has difficulty seeing why it is not his natural right to muddy the waters flowing past his door. The law, always behind the times, requires elaborate stitching and fitting to adapt it to this newly perceived aspect of the commons.

The pollution problem is a consequence of population. It did not much matter how a lonely American frontiersman disposed of his waste. “Flowing water purifies itself every 10 miles,” my grandfather used to say, and the myth was near enough to the truth when he was a boy, for there were not too many people. But as population became denser, the natural chemical and biological recycling processes became overloaded, calling for a redefinition of property rights.

How to Legislate Temperance?

Analysis of the pollution problem as a function of population density uncovers a not generally recognized principle of morality, namely: the morality of an act is a function of the state of the system at the time it is performed.³ Using the commons as a cesspool does not harm the general public under frontier conditions, because there is no public; the same behavior in a metropolis is unbearable. A hundred and fifty years ago a plainsman could kill an American bison, cut out only the tongue for his dinner, and discard the rest of the animal. He was not in any important

sense being wasteful. Today, with only a few thousand bison left, we would be appalled at such behavior. . . .

That morality is system-sensitive escaped the attention of most codifiers of ethics in the past. "Thou shalt not . . ." is the form of traditional ethical directives which make no allowance for particular circumstances. The laws of our society follow the pattern of ancient ethics, and therefore are poorly suited to governing a complex, crowded, changeable world. Our epicyclic solution is to augment statutory law with administrative law. Since it is practically impossible to spell out all the conditions under which it is safe to burn trash in the backyard or to run an automobile without smog control, by law we delegate the details to bureaus. The result is administrative law, which is rightly feared for an ancient reason—*Quis custodiet ipsos custodes?*—"Who shall watch the watchers themselves?" John Adams said that we must have "a government of laws and not men." Bureau administrators, trying to evaluate the morality of acts in the total system, are singularly liable to corruption, producing a government by men, not laws.

Prohibition is easy to legislate (though not necessarily to enforce); but how do we legislate temperance? Experience indicates that it can be accomplished best through the mediation of administrative law. We limit possibilities unnecessarily if we suppose that the sentiment of *Quis custodiet* denies us the use of administrative law. We should rather retain the phrase as a perpetual reminder of fearful dangers we cannot avoid. The great challenge facing us now is to invent the corrective feedbacks that are needed to keep custodians honest. We must find ways to legitimate the needed authority of both the custodians and the corrective feedbacks.

Freedom to Breed Is Intolerable

The tragedy of the commons is involved in population problems in another way. In a world governed solely by the principle of "dog eat dog"—if indeed there ever was such a world—how many children a family had would not be a matter of public concern. Parents who bred too exuberantly would leave fewer descendants, not more, because they would be unable to care adequately for their children. David Lack and others have found that such a negative feedback demonstrably controls the fecundity of birds.⁴ But men are not birds, and have not acted like them for millennia, at least.

If each human family were dependent only on its own resources; if the children of improvident parents starved to death; if, thus, overbreeding brought its own "punishment" to the germ line—then there would be no public interest in controlling the breeding of families. But our society is deeply committed to the welfare state,⁵ and hence is confronted with another aspect of the tragedy of the commons.

In a welfare state, how shall we deal with the family, the religion, the race, or the class (or indeed any distinguishable and cohesive group) that adopts overbreeding as a policy to secure its own aggrandizement?⁶ To couple the concept of freedom to breed with the belief that everyone born has an equal right to the commons is to lock the world into a tragic course of action. . . .

Conscience Is Self-Eliminating

It is a mistake to think that we can control the breeding of mankind in the long run by an appeal to conscience. . . .

People vary. Confronted with appeals to limit breeding, some people will undoubtedly respond to the plea more than others. Those who have more children will produce a larger fraction of the next generation than those with more susceptible consciences. The difference will be accentuated, generation by generation. . . . The argument has here been stated in the context of the population problem, but it applies equally well to any instance in which society appeals to an individual exploiting a commons to restrain himself for the general good—by means of his conscience. To make such an appeal is to set up a selective system that works toward the elimination of conscience from the race.

Pathogenic Effects of Conscience

. . . To conjure up a conscience in others is tempting to anyone who wishes to extend his control beyond the legal limits. Leaders at the highest level succumb to this temptation. Has any President during the past generation failed to call on labor unions to moderate voluntarily their demands for higher wages, or to steel companies to honor voluntary guidelines on prices? I can recall none. The rhetoric used on such occasions is designed to produce feelings of guilt in noncooperators.

For centuries it was assumed without proof that guilt was a valuable, perhaps even an indispensable, ingredient of the civilized life. Now, in this post-Freudian world, we doubt it.

Paul Goodman speaks from the modern point of view when he says:

No good has ever come from feeling guilty, neither intelligence, policy, nor compassion. The guilty do not pay attention to the object but only to themselves, and not even to their own interests, which might make sense, but to their anxieties.⁷

One does not have to be a professional psychiatrist to see the consequences of anxiety. We in the Western world are just emerging from a dreadful two-centuries-long

Dark Ages of Eros that was sustained partly by prohibition laws, but perhaps more effectively by the anxiety-generating mechanisms of education. . . .

Since proof is difficult, we may even concede that the results of anxiety may sometimes, from certain points of view, be desirable. The larger question we should ask is whether, as a matter of policy, we should ever encourage the use of a technique the tendency (if not the intention) of which is psychologically pathogenic. We hear much talk these days of responsible parenthood; the coupled words are incorporated into the titles of some organizations devoted to birth control. Some people have proposed massive propaganda campaigns to instill responsibility into the nation's (or the world's) breeders. But what is the meaning of the word *responsibility* in this context? Is it not merely a synonym for the word *conscience*? When we use the word *responsibility* in the absence of substantial sanctions are we not trying to browbeat a free man in a commons into acting against his own interest? *Responsibility* is a verbal counterfeit for a substantial quid pro quo. It is an attempt to get something for nothing.

If the word *responsibility* is to be used at all, I suggest that it be in the sense Charles Frankel uses it.⁸ "Responsibility," says this philosopher, "is the product of definite social arrangements." Notice that Frankel calls for social arrangements—not propaganda.

Mutual Coercion Mutually Agreed Upon

The social arrangements that produce responsibility are arrangements that create coercion, of some sort. Consider bank-robbing. The man who takes money from a bank acts as if the bank were a commons. How do we prevent such action? Certainly not by trying to control his behavior solely by a verbal appeal to his sense of responsibility. Rather than rely on propaganda we follow Frankel's lead and insist that a bank is not a commons; we seek the definite social arrangements that will keep it from becoming a commons. That we thereby infringe on the freedom of would-be robbers we neither deny nor regret.

The morality of bank-robbing is particularly easy to understand because we accept complete prohibition of this activity. We are willing to say "Thou shalt not rob banks," without providing for exceptions. But temperance also can be created by coercion. Taxing is a good coercive device. To keep downtown shoppers temperate in their use of parking space we introduce parking meters for short periods, and traffic fines for longer ones. We need not actually forbid a citizen to park as long as he wants to; we need merely make it increasingly expensive for him to do so. Not prohibition, but carefully biased options are what we offer him. A Madison Avenue man might call this persuasion; I prefer the greater candor of the word *coercion*.

Coercion is a dirty word to most liberals now, but it need not forever be so. As with the four-letter words, its dirtiness can be cleansed away by exposure to the light, by saying it over and over without apology or embarrassment. To many, the word *coercion* implies arbitrary decisions of distant and irresponsible bureaucrats; but this is not a necessary part of its meaning. The only kind of coercion I recommend is mutual coercion, mutually agreed upon by the majority of the people affected.

To say that we mutually agree to coercion is not to say that we are required to enjoy it, or even to pretend we enjoy it. Who enjoys taxes? We all grumble about them. But we accept compulsory taxes because we recognize that voluntary taxes would favor the conscienceless. We institute and (grumbly) support taxes and other coercive devices to escape the horror of the commons.

An alternative to the commons need not be perfectly just to be preferable. . . . The alternative of the commons is too horrifying to contemplate. Injustice is preferable to total ruin.

It is one of the peculiarities of the warfare between reform and the status quo that it is thoughtlessly governed by a double standard. Whenever a reform measure is proposed it is often defeated when its opponents triumphantly discover a flaw in it. As Kingsley Davis has pointed out,⁹ worshippers of the status quo sometimes imply that no reform is possible without unanimous agreement, an implication contrary to historical fact. As nearly as I can make out, automatic rejection of proposed reforms is based on one of two unconscious assumptions: (i) that the status quo is perfect; or (ii) that the choice we face is between reform and no action; if the proposed reform is imperfect, we presumably should take no action at all, while we wait for a perfect proposal.

But we can never do nothing. That which we have done for thousands of years is also action. It also produces evils. Once we are aware that the status quo is action, we can then compare its discoverable advantages and disadvantages with the predicted advantages and disadvantages of the proposed reform, discounting as best we can for our lack of experience. On the basis of such a comparison, we can make a rational decision which will not involve the unworkable assumption that only perfect systems are tolerable.

Recognition of Necessity

Perhaps the simplest summary of this analysis of man's population problems is this: the commons, if justifiable at all, is justifiable only under conditions of low-population density. As the human population has increased, the commons has had to be abandoned in one aspect after another.

First we abandoned the commons in food gathering, enclosing farmland and restricting pastures and hunting and fishing areas. These restrictions are still not complete throughout the world.

Somewhat later we saw that the commons as a place for waste disposal would also have to be abandoned. Restrictions on the disposal of domestic sewage are widely accepted in the Western world; we are still struggling to close the commons to pollution by automobiles, factories, insecticide sprayers, fertilizing operations, and atomic energy installations.

In a still more embryonic state is our recognition of the evils of the commons in matters of pleasure. There is almost no restriction on the propagation of sound waves in the public medium. The shopping public is assaulted with mindless music, without its consent. Our government is paying out billions of dollars to create supersonic transport which will disturb 50,000 people for every one person who is whisked from coast to coast 3 hours faster. Advertisers muddy the airwaves of radio and television and pollute the view of travelers. We are a long way from outlawing the commons in matters of pleasure.

Is this because our Puritan inheritance makes us view pleasure as something of a sin, and pain (that is, the pollution of advertising) as the sign of virtue?

Every new enclosure of the commons involves the infringement of somebody's personal liberty. Infringements made in the distant past are accepted because no contemporary complains of a loss. It is the newly proposed infringements that we vigorously oppose; cries of "rights" and "freedom" fill the air. But what does "freedom" mean? When men mutually agreed to pass laws against robbing, mankind became more free, not less so. Individuals locked into the logic of the commons are free only to bring on universal ruin; once they see the necessity of mutual coercion, they become free to pursue other goals. I believe it was Hegel who said, "Freedom is the recognition of necessity."

The most important aspect of necessity that we must now recognize is the necessity of abandoning the commons in breeding. No technical solution can rescue us from the misery of overpopulation. Freedom to breed will bring ruin to all. At the moment, to avoid hard decisions many of us are tempted to propagandize for conscience and responsible parenthood. The temptation must be resisted, because an appeal to independently acting consciences selects for life disappearance of all conscience in the long run, and an increase in anxiety in the short.

The only way we can preserve and nurture other and more precious freedoms is by relinquishing the freedom to breed, and that very soon. "Freedom is the recognition of necessity"—and it is the role of education to reveal to all the necessity of abandoning the freedom to breed. Only so, can we put an end to this aspect of the tragedy of the commons.

NOTES

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REDEFINING NATIONAL SECURITY

LESTER R. BROWN*

Introduction[†]

The term “national security” has become a commonplace expression, a concept regularly appealed to. It is used to justify the maintenance of armies, the development of new weapons systems, and the manufacture of armaments. A fourth of all the federal taxes in the United States and at least an equivalent amount in the Soviet Union are levied in its name.¹

The concern for the security of a nation is undoubtedly as old as the nation state itself, but since World War II the concept of “national security” has acquired an overwhelmingly military character. Commonly veiled in secrecy, considerations of military threats have become so dominant that other threats to the security of nations have often been ignored. Accumulating evidence indicates that new threats are emerging, threats with which military forces cannot cope.

The notion that countries everywhere should be prepared to defend themselves at all times from any conceivable external threat is a relatively modern one. As recently as 1939, for example, the United States had a defense budget of only \$1.3 billion. Prior to World War II, countries mobilized troops in times of war instead of relying on a large permanent military establishment.²

The policy of continual preparedness has led to the militarization of the world economy, with military expenditures now accounting for 6 percent of the global

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[†]I am indebted to my colleague Frank Record for his assistance with the research for this paper.

product. Worldwide, the military claims of national budgets exceed health-service appropriations. Most countries spend more on “national security” than they do on educating their youth. The development of new, “more effective” weapons systems now engages fully a quarter of the world’s scientific talent.³

World military expenditures in 1976 reached an estimated \$350 billion, a sum that exceeds the income of the poorest one-half of humanity. At the current rate of weapons procurement, two days of world expenditures on arms equal the annual budget of the United Nations and its specialized agencies. Thirty million men and women in their prime productive years are under arms today.⁴

. . . .

The overwhelmingly military approach to national security is based on the assumption that the principal threat to security comes from other nations. But the threats to security may now arise less from the relationship of nation to nation and more from the relationship of man to nature. Dwindling reserves of oil and the deterioration of the earth’s biological systems now threaten the security of nations everywhere.

National security cannot be maintained unless national economies can be sustained, but, unfortunately, the health of many economies cannot be sustained for much longer without major adjustments. All advanced industrial economies are fueled primarily by oil, a resource that is being depleted. While military strategists have worried about the access of industrial economies to Middle Eastern oil, another more serious threat, the eventual exhaustion of the world’s oil supplies, has been moving to the fore. If massive alternative sources of energy are not in place when the projected downturn in world oil production comes some 15 years hence, crippling economic disruptions will result.

While the oil supply is threatened by depletion, the productivity of the earth’s principal biological systems—fisheries, forests, grasslands, and croplands—is threatened by excessive human claims. These biological systems provide all food and all the raw materials for industry except minerals and petrochemicals. In fishery after fishery, the catch now exceeds the long-term sustainable yield. The cutting of trees exceeds the regenerative capacity of forests almost everywhere. Grasslands are deteriorating on every continent as livestock populations increase along with human population. Croplands too are being damaged by erosion as population pressures mount. Failure to arrest this deterioration of biological systems threatens not only the security of individual nations but the survival of civilization as we know it.

The deterioration of the earth’s biological systems is not a peripheral issue of concern only to environmentalists. The global economy depends on these biological systems. Anything that threatens their viability threatens the global economy. Any deterioration in these systems represents a deterioration in the human prospect.

As the [1970s] progress these new threats are becoming more visible. During the decade, food shortages have led to temporary rises in death rates in at least a dozen countries. Indeed, the lives lost to the increase in hunger may exceed the combat casualties in all the international conflicts of the past two decades.

Global food insecurity and the associated instability in food prices have become a common source of political instability. The centuries-old dynasty in Ethiopia came to an end in 1974 not because a foreign power invaded and prevailed but because ecological deterioration precipitated a food crisis and famine. In the summer of 1976 the Polish Government was badly shaken by riots when it sought to raise food prices closer to the world level. In 1977, the riots that followed official attempts to raise food prices in Egypt came closer to toppling the government of President Anwar Sadat than has Israeli military power.⁵

The need for countries to confront these threats and to address them cooperatively suggests that the military's role in securing a nation's well-being and survival is relatively less important than it once was. At the same time, protecting and securing the future of a nation by strengthening international cooperation, developing alternative energy sources, and producing adequate food supplies are escalating in importance.

....

Conclusions

The military threat to national security is only one of many that governments must now address. The numerous new threats derive directly or indirectly from the rapidly changing relationship between humanity and the earth's natural systems and resources. The unfolding stresses in this relationship initially manifest themselves as ecological stresses and resource scarcities. Later they translate into economic stresses—inflation, unemployment, capital scarcity, and monetary instability. Ultimately, these economic stresses convert into social unrest and political instability.

National defense establishments are useless against these new threats. Neither bloated military budgets nor highly sophisticated weapons systems can halt the deforestation or solve the firewood crisis now affecting so many Third World countries. Blocking external aggression may be a relatively simple matter compared with arresting the deterioration of local ecological systems.

The new threats to national security are extraordinarily complex. Ecologists understand that the deteriorating relationship between four billion humans and the earth's biological systems cannot continue. But few political leaders have yet to grasp the social significance of this unsustainable situation.

Analyzing and understanding the nature and scale of these new threats to national security will challenge the information-gathering and analytical skills of governments. Unfortunately, the decision-making apparatus in most governments is not organized to balance threats of a traditional military nature with those of ecological and economic origins. Many political leaders perceive the new threats to security dimly, if at all. Intelligence agencies are organized to alert political leaders to potential military threats, but there is no counterpart network for warning of the collapse of a biological system. Military strategists understand the nature of military threats. Energy analysts understand the need to shift from oil to alternative energy sources, and ecologists understand the need to arrest ecological deterioration. But few individuals are trained or able to weigh and evaluate such a diversity of threats and then to translate such an assessment into the allocation of public resources that provides the greatest national security.

If military threats are considered in isolation, military strength of adversaries or potential adversaries can be measured in terms of the number of men under arms, the number and effectiveness of tanks, planes, and other military equipment, and (where the superpowers are concerned) the number of nuclear warheads and delivery missiles. Given the desire to be somewhat stronger than one's opponents, those fashioning the military budget can argue precisely and convincingly for a heavy commitment of public resources to the manufacture of weapons.

Nonmilitary threats to a nation's security are much less clearly defined than military ones. They are often the result of cumulative processes that ultimately lead to the collapse of biological systems or to the depletion of a country's oil reserves. These processes in themselves are seldom given much thought until they pass a critical threshold and disaster strikes. Thus, it is easier in the government councils of developing countries to justify expenditures for the latest model jet fighters than for family planning to arrest the population growth that leads to food scarcity. Likewise, in industrial societies vast expenditures on long-range missiles are easier to obtain than the investments in energy conservation needed to buy time to develop alternative energy sources.

The purpose of national security deliberations should not be to maximize military strength but to maximize national security. If this latter approach were used, public resources would be distributed more widely among the many threats to national security—both the traditional military one and the newer, less precisely measured ones.

The purpose of this paper is not to argue for specific military budget cuts. Rather it is to suggest that profound new threats to the security of nations are arising and that these need to be fully considered along with the traditional ones. Only then can national security be optimized. The time for discarding long-standing and outmoded assumptions held by the governments of the superpowers is long overdue. The U.S.-Soviet relationship has changed markedly over the years, becoming less

belligerent and more cooperative than it once was. During the current decade the Soviets have come to rely heavily on the United States for food, and Western banks and corporations have developed enough confidence in Soviet integrity to extend to the Soviet Union several billion dollars' worth of loans and credits.⁶ But military expenditures in the two countries do not reflect this new relationship.

Lags in reordering budgetary allocations to confront the new threats to national security are glaring. In 1977, global research expenditures on arms research are six times those for energy research, but all nations might be far more secure if this ratio were reversed. Even though a 3-percent annual population growth rate in a Third World country (which translates into a 19-fold increase in a century) can destroy a country's ecological system and social structure more effectively than a foreign adversary ever could, expenditures on population education and family planning are often negligible or nonexistent. Countries will expend large sums on tanks and planes to defend their territorial sovereignty but nothing to conserve the soil on which their livelihoods depend.

A scarcity of vital resources such as oil or grain could lead to intense competition among countries for supplies, a competition that could easily escalate into military conflict. Competition between Iceland and Great Britain over the North Atlantic cod fisheries, between India and Bangladesh over the waters of the Ganges, and between Mexican and U.S. workers for jobs in the United States all manifest the new threats to national economic security posed by scarcity.

The continuing focus of governments on military threats to security may not only exclude attention to the newer threats, but may also make the effective address of the latter more difficult. The heavy military emphasis on national security can absorb budgetary resources, management skills, and scientific talent that should be devoted to the new nonmilitary threats. Given the enormous investment required to shift the global economy from oil to alternative energy sources, one might well ask whether the world could afford the sustained large-scale use of military might of the sort deployed in World Wars I and II. Indeed, the absurdity of the traditional view is pointed out by science-fiction writer Isaac Asimov: "Even a nonnuclear war cannot be fought because it is too energy-rich a phenomenon." We cannot afford such extravagance, contends Asimov, "and are going to have to use all our energy to stay alive" with none "to spare for warfare."⁷ In effect, there simply may not be enough fuel to operate both tanks and tractors. At some point governments will be forced either to realign priorities in a manner responsive to the new threats or to watch their national security deteriorate.

The scientific talent required to make the energy transition and to prevent the destruction of biological systems is enormous. The all-out mobilization that circumstances call for entails, among other things, shifting part of that one-fourth of the world's scientific talent now employed in the military sector to the energy sector. At a time when oil reserves are being depleted, developing new energy systems may be more essential to a nation's survival than new weapons systems.

Apart from the heavy claim on public resources, the continuing exorbitant investment in armaments contributes to a psychological climate of suspicion and mistrust that makes the cooperative international address of new threats to the security of nations next to impossible. Conversely, a reduction in military expenditures by major powers would likely lead to a more cooperative attitude among national governments.

In a world that is not only ecologically interdependent but economically and politically interdependent as well, the concept of "national" security is no longer adequate. Individual countries must respond to global crises because national governments are still the principal decision-makers, but many threats to security require a coordinated international response. The times call for efforts to secure the global systems on which nations depend. If the global climatic system is inadvertently altered by human activity, all countries will be affected. If the international monetary system is not secure, all national economies will suffer. If countries do not cooperate and preserve oceanic fisheries, food prices everywhere will rise. But political leaders have yet to realize that national security is meaningless without global security.

In some situations, countries could be drawn together into a variety of cooperative efforts to cope with shared problems. The Soviet need for assured access to U.S. grain, for example, has led to a five-year U.S.-Soviet grain agreement, and to strengthened economic ties between the two superpowers. Similarly, Middle Eastern oil-exporting countries have turned to Western banks for assistance in the management of their vast financial reserves.

In the late twentieth century the key to national security is sustainability. If the biological underpinnings of the global economic system cannot be secured, then the long-term economic outlook is grim indeed. If new energy sources and systems are not in place as the oil wells begin to go dry, then severe economic disruptions are inevitable.

Perhaps the best contemporary definition of national security is one by Franklin P. Huddle, director of the U.S. Congressional study, *Science, Technology and American Diplomacy*. In *Science*, Huddle writes that

National security requires a stable economy with assured supplies of materials for industry. In this sense, frugality and conservation of materials are essential to our national security. Security means more than safety from hostile attack; it includes the preservation of a system of civilization.⁸

A forceful argument can now be made that considerations of security are meaningful only when the global threats to security are taken into account. Neither individual security nor national security can be sensibly considered in isolation. In effect, the traditional military concept of "national security" is growing ever less adequate as nonmilitary threats grow more formidable.

NOTES

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3. Ruth Leger Sivard, *World Military and Social Expenditures 1974* (Leesburg, Virginia: WMSE Publications, 1974).
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6. "Russia Won't Meet 5-Year Growth Goal, CIA Says; Tough Problems Seen in 1980s," *Wall Street Journal*, August 18, 1976.
7. "Dr. Asimov: The Future Is No Fun," *Washington Star*, April 27, 1975.
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TWO AGENDAS ON AMAZON DEVELOPMENT

COORDINATING BODY FOR THE INDIGENOUS PEOPLES' ORGANIZATIONS OF THE AMAZON BASIN (COICA)*

For Bilateral and Multilateral Funders

(This document is addressed to the World Bank, the Inter-American Development Bank, the US Agency for International Development, and the European Economic Community.)

We, the Indigenous Peoples, have been an integral part of the Amazon Biosphere for millennia. We have used and cared for the resources of that biosphere with a great deal of respect, because it is our home, and because we know that our survival and that of our future generations depends on it. Our accumulated knowledge about the ecology of our home, our models for living with the peculiarities of the Amazon Biosphere, our reverence and respect for the tropical forest and its other inhabitants, both plant and animal, are the keys to guaranteeing the future of the Amazon Basin, not only for our peoples, but also for all of humanity.

What COICA Wants

1. The most effective defense of the Amazonian Biosphere is the recognition and defense of the territories of the region's Indigenous Peoples and

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the promotion of their models for living within that Biosphere and for managing its resources in a sustainable way. The international funders of Amazonian development should educate themselves about the Indigenous Peoples' relationship with their environment, and formulate new concepts of Amazonian development together with new criteria for supporting Amazonian development projects which would be compatible with the Indigenous Peoples' principles of respect and care for the world around them, as well as with their concern for the survival and well-being of their future generations.

2. The international funders must recognize the rights of Indigenous Peoples as those are being defined within the Working Group on Indigenous Peoples, established by the UN Human Rights Commission. These rights should form the basis of the institution's policy towards the Indigenous Peoples and their territories who live in those areas where the funder is supporting development work. The funders should consult directly with the organizations of the Indigenous Peoples throughout the process of establishing this policy and should distribute that policy widely among governments and the organizations of Indigenous Peoples.
3. There can be no development projects in indigenous areas without the informed consent of the Indigenous Peoples affected. The funders must make every effort, through field research conducted by personnel of the funding institution, to verify the existence of an indigenous population, or the possible negative impact on an indigenous population, in areas where they are considering the implementation of a project. If either is the case, the funder must openly recognize the existence of this population or the negative impact on them, and then should establish as a condition for further funding the project
 - that the government responsible for implementing the project also recognize the existence of the population and/or the negative impact;
 - that the affected population be informed of the plans and impact of the plans; and
 - that the affected population consent to the implementation of the plans.

These conditions should be monitored by both the funder and the organization which represents the affected population.

4. If the indigenous population has given its informed consent to the implementation of a development project within its territory, the project must be designed in such a way that it respects the territories of the population as they define them, their economy and their social organization, according to the institutional policy as described in Point One. There should be special components of the project which lend support directly to the

indigenous population for their own needs and for the development proposals which they may have. The organization which represents the affected population should participate in the design of the project.

5. The international funders should enter into a direct relation of collaboration and mutual respect with the organizations of Indigenous Peoples, through their representatives. This relation should establish the basis for:
 - *consultations* on all aspects of projects implemented in areas with an indigenous population or which have an impact on an indigenous population;
 - *participation* of representatives of Indigenous Peoples in the planning, implementation, and evaluation of projects;
 - *exchange* of information of mutual interest on plans, projects, activities, and needs of both. . . .

Indigenous Peoples' Alternatives for Amazonian Development

An important task of the Coordinating Body is to present to the international community the alternatives which we Indigenous Peoples offer for living with the Amazonian Biosphere, caring for it and developing within it. This is one of our important contributions to a better life for humankind. The following represent, in general terms, our program for the defense of the Amazonian Biosphere.

1. The best defense of the Amazonian Biosphere is the defense of the territories recognized as homeland by Indigenous Peoples, and their promotion of our models for living within that biosphere and for managing its resources. This implies:
 - education for the national and international communities regarding the Indigenous Peoples' concept of the unity between people and territory, and regarding our models for managing and caring for our environment.
 - work with national governments, environmental organizations, and international institutions which fund Amazon development to develop new concepts and models for occupying and using the Amazon Basin in keeping with our long-term perspective (future generations), our respect for the interdependence between humankind and our environments, and our need to improve the well-being of the entire community; further work with the same institutions to translate these new concepts into concrete programs for developing and caring for the Amazon Basin and its inhabitants.

- work with national governments, environmental organizations, and international funders to reorganize the occupation of supposedly empty Amazonian territories by combining indigenous territories, with forest, wildlife, and extractive reserves in favor of the indigenous and other current inhabitants; by discouraging the “conquest and colonization” of our homeland; and by recuperating those vast areas devastated by state policies of conquest and colonization.
 - research on the natural resources and traditional crops used by Indigenous Peoples, on the traditional systems for utilizing and conserving resources, and on models for the extraction of renewable resources.
 - evaluation and systematization of the development projects implemented by Indigenous Peoples which attempt to combine the demands of the market with a respect for indigenous principles of development.
2. The defense of the Amazon Biosphere/indigenous territories must go hand in hand with the recognition of and respect for the territorial, political, cultural, economic, and human rights of the Indigenous Peoples. This implies:
 - continued participation and support for the UN process for establishing an international instrument recognizing the rights of Indigenous Peoples.
 - education for the national and international communities regarding the rights of Indigenous Peoples.
 - establishment of mechanisms at both the national and international level for defending the rights of Indigenous Peoples in cases of violations of or conflicts over those rights.
 3. The right of self-determination for Indigenous Peoples within their environment/territory is fundamental for guaranteeing the well-being of the indigenous population and of the Amazonian Biosphere. This implies:
 - respect for our autonomous forms of community, ethnic, and regional government.
 - indigenous control over the economic activities within the indigenous territories, including the extraction of mineral reserves.
 - respect for indigenous customary law and the indigenous norms for social control.
 4. Concrete Proposals for International Cooperation: For many decades now, most of our peoples have been experimenting with ways to participate in the encroaching market economies of our respective countries while trying to survive as peoples intimately linked to the Amazonian forest. We have done this despite the hostility shown us by the frontier society and despite the fact that, within the context of the market

economy, we are desperately poor. For these reasons, we have organized ourselves in new ways and developed and managed a variety of small programs to improve our health, education, and economy. . . . It is these small-scale, locally controlled initiatives which should be the cornerstone of future Amazonian development. . . .

To the Community of Concerned Environmentalists

We, the Indigenous Peoples, have been an integral part of the Amazonian Biosphere for millennia. We use and care for the resources of that biosphere with respect, because it is our home, and because we know that our survival and that of our future generations depend on it. Our accumulated knowledge about the ecology of our forest home, our models for living within the Amazonian Biosphere, our reverence and respect for the tropical forest and its other inhabitants, both plant and animal, are the keys to guaranteeing the future of the Amazon Basin. A guarantee not only for our peoples, but also for all of humanity. Our experience, especially during the past 100 years, has taught us that when politicians and developers take charge of our Amazon, they are capable of destroying it because of their shortsightedness, their ignorance, and their greed.

We are pleased and encouraged to see the interest and concern expressed by the environmentalist community for the future of our homeland. We are gratified by the efforts you have made in your country to educate your peoples about our homeland and the threat it now faces as well as the efforts you have made in South America to defend the Amazonian rain forests and to encourage proper management of their resources. We greatly appreciate and fully support the efforts some of you are making to lobby the US Congress, the World Bank, USAID [US Agency for International Development], and the Inter-American Development Bank on behalf of the Amazonian Biosphere and its inhabitants. We recognize that through these efforts, the community of environmentalists has become an important political actor in determining the future of the Amazon Basin.

We are keenly aware that you share with us a common perception of the dangers which face our homeland. While we may differ about the methods to be used, we do share a fundamental concern for encouraging the long-term conservation and the intelligent use of the Amazonian rain forest. We have the same conservation goals.

Our Concerns

We are concerned that you have left us, the Indigenous Peoples, out of your vision of the Amazonian Biosphere. The focus of concern of the environmental

community has typically been the preservation of the tropical forest and its plant and animal inhabitants. You have shown little interest in its human inhabitants who are also part of that biosphere.

We are concerned about the “debt for nature swaps” which put your organizations in a position of negotiating with our governments for the future of our homelands. We know of specific examples of such swaps which have shown the most brazen disregard for the rights of the indigenous inhabitants and which are resulting in the ultimate destruction of the very forests which they were meant to preserve.

We are concerned that you have left us Indigenous Peoples and our organizations out of the political process which is determining the future of our homeland. While we appreciate your efforts on our behalf, we want to make it clear that we never delegated any power of representation to the environmentalist community nor to any individual or organization within that community.

We are concerned about the violence and ecological destruction of our homeland caused by the increasing production and trafficking of cocaine, most of which is consumed here in the US.

What We Want

We want you, the environmental community, to recognize that the most effective defense of the Amazonian Biosphere is the recognition of our ownership rights over our territories and the promotion of our models for living within that biosphere.

We want you, the environmental community, to recognize that we Indigenous Peoples are an important and integral part of the Amazonian Biosphere.

We want you, the environmental community, to recognize and promote our rights as Indigenous Peoples as we have been defining those rights within the UN Working Group for Indigenous Peoples.

We want to represent ourselves and our interests directly in all negotiations concerning the future of our Amazonian homeland.

What We Propose

We propose that you work directly with our organizations on all your programs and campaigns which affect our homelands.

We propose that you swap “debt for indigenous stewardship” which would allow your organizations to help return areas of the Amazonian rain forest to our care and control.

We propose establishing a permanent dialogue with you to develop and implement new models for using the rain forest based on the list of alternatives presented with this document.

We propose joining hands with those members of the worldwide environmentalist community who:

- recognize our historical role as caretakers of the Amazon Basin.
- support our efforts to reclaim and defend our traditional territories.
- accept our organizations as legitimate and equal partners.

We propose reaching out to other Amazonian peoples such as the rubber tappers, the Brazil-nut gatherers, and others whose livelihood depends on the nondestructive extractive activities, many of whom are of indigenous origin.

We propose that you consider allying yourselves with us, the Indigenous Peoples of the Amazon, in defense of our Amazonian homeland.

BEYOND THE TRAGEDY OF THE COMMONS

XAVIER BASURTO AND ELINOR OSTROM*

[Editors' note: The article from which this excerpt is drawn contains case studies of three small-scale fisheries in the Gulf of California, Mexico, as well as the conceptual material presented here. Readers seeking case-related examples or insights are encouraged to consult the original work.]

Introduction

In this paper, we intend to demonstrate the feasibility and challenge of moving beyond “The Tragedy of the Commons” that Garrett Hardin presented in 1968. Hardin portrayed a set of pastoralists—who are inexorably led to overuse their common pasture—as an allegory for what he thought was typical for common-pool resources (CPRs) not owned privately or by a government. CPRs are normally used by multiple individuals and generate finite quantities of resource units where one person’s use subtracts from the quantity of resource units available to others (Ostrom and Ostrom 1977). Most CPRs are sufficiently large that multiple actors can simultaneously use the resource system. Efforts to exclude potential beneficiaries are costly. Examples of CPRs include both natural and human-made systems including: Hardin’s grazing lands, groundwater basins, irrigation systems, forests, fisheries, mainframe computers, government and corporate treasuries, and the

*Excerpted from “Beyond the Tragedy of The Commons,” *Economia Delle Fonti Di Energia E Dell’ Ambiente* No. 1 (2009): 35–60. Reprinted with permission.

Internet. Examples of resource units derived from CPRs are fodder, water, timber, computer-processing units, information bits, and budget allocations (Blomquist and Ostrom 1985).

In an effort to move beyond Hardin's classic allegory, it is important that one does not dismiss Hardin's predictions for some CPRs. The major problem of his original analysis was that he presented "the tragedy" as a universal phenomenon. No set of users could overcome the tragedy. Thus, CPR users were trapped needing external interventions to extract them from gross overuse. Hardin's presumption of universality is what one needs to move beyond.

Having said this, many field settings exist where Hardin is correct. Overharvesting frequently occurs when resource users are totally anonymous, do not have a foundation of trust and reciprocity, cannot communicate, and have no established rules. Massive overfishing of ocean fisheries and deforestation in many countries illustrate the destruction of resources that occurs when appropriate institutions have not been designed and implemented (Ostrom 2008a). In an experimental lab, eight subjects presented with a common-pool resource problem overharvest when they do not know who is in their group, no feedback is provided on individual actions, and they cannot communicate. . . . They do worse than game theory predicts and fit the behavior predicted by Hardin.

If the experimental subjects are enabled to sit in a circle talking about the puzzle in a face-to-face group, they usually develop trust and reciprocity. Within a few rounds, they reduce overharvesting substantially and do very well (Ostrom *et al.* 1992). In traditional, non-cooperative game theory, communication is not supposed to improve the outcomes obtained, but many groups solve the problem of overharvesting after engaging in face-to-face communication (Ostrom 2007a). Further, many smaller groups that use CPRs—inshore fisheries, forests, irrigation systems, and pastures—have developed a diversity of norms and rules that have enabled them to solve problems of overharvesting. A diversity of studies illustrate that it is not impossible to overcome the temptation to overharvest (NRC 1986, 2002; McCay and Acheson 1987; Berkes 1989; Dolšák and Ostrom 2003; Basurto 2005; Ostrom 2005; van Laerhoven and Ostrom 2007; Lansing 2008).

We need to build a theoretical foundation for explaining why some resource users are able to self-organize and govern the use of a resource over time in a sustainable manner and why others fail or never make the effort. To do this, we face core challenges to overcome two scholarly approaches adopted by many scholars that limit the development of a predictive theory that is useful in policy analysis. The first problem was stimulated by Hardin's analysis, and we call it the "panacea analytical trap." It treats all resources as having basic similarities. This trap has often led to a recommendation of a preferred institutional solution as a simplified blueprint. The second challenge is the "my-case-is-unique" analytical trap. This approach challenges the usefulness of building theoretical explanations about the

fit between diverse types of institutions and local ecological and social settings. To build theory, it is necessary to move away from both extremes to develop an interdisciplinary diagnostic framework that helps to provide a foundation for further empirical research and learning (Bardhan and Ray 2008; Chopra 2008).

Avoiding the Panacea Analytical Trap

Historically, the cure-alls that have been recommended most frequently promote government ownership (Ophuls 1973; Feeny *et al.* 1996: 195) or privatization (Demsetz 1967; Posner 1977; Simmons *et al.* 1996). Panacea-type solutions can be a by-product of approaches that generate highly abstract models and use simple empirical studies to illustrate general patterns of social phenomena (Bouchaud 2008). For instance, since the important early studies of open-access fisheries by Gordon (1954) and Scott (1955), most theoretical studies by political economists have analyzed simple CPR systems using relatively similar assumptions (Feeny *et al.* 1996; Ruddle 2007; Ruddle and Hickey 2008). In such systems, it is assumed that the resource generates a highly predictable, finite supply of one type of resource unit (one species, for example) in each relevant time period. Resource users are assumed to be homogeneous in terms of their assets, skills, discount rates, and cultural views. Users are also assumed to be short-term, profit-maximizing actors who possess complete information. As a result, this theory universally assumes that anyone can enter the resource and harvest resource units. Users are viewed as able to gain property rights only to what they harvest, which they then sell in an open competitive market. Under this approach, the open-access condition is a given. The users make no effort to change it. Users act independently and do not communicate or coordinate their activities in any way. Textbooks in resource economics, and law and economics, present this conventional theory of a simple CPR as the only theory needed for understanding CPRs more generally (but, for a different approach, see Baland and Platteau 1996; Clark 2006).

This approach emphasizes collecting information on a large number of cases to be able to find the correlation of dependent and independent variables with a statistical degree of significance. This can come at the cost of being able to develop in-depth knowledge of each of the cases under study. Homogenization assumptions about the cases under consideration are often necessary to conduct quantitative analyses. In the process, the analyst risks losing track of the importance of context and history and faces challenges to be able to effectively convey the sense of complexity and diversity that exists in the empirical world. The basic theory discussed above was applied to all CPRs regardless of the capacity of resource users to communicate and coordinate their activities until the work of the National Academy of Sciences' Panel on Common Property (NRC 1986) strongly challenged this approach. The growing

evidence from many qualitative studies of CPRs conducted in the field called for a serious rethinking of the theoretical foundations for the analysis of CPRs (Berkes 1986, 1989; Berkes *et al.* 1989; Bromley *et al.* 1992; McCay and Acheson 1987).

Avoiding the “My-Case-Is-Unique” Analytical Trap

The rich case-study literature has played a prominent role in illustrating the wide diversity of settings in which appropriators dependent on CPRs have organized themselves to achieve much higher outcomes than is predicted by the conventional theory (Cordell 1989; Wade 1994; Ruddle and Johannes 1985; Sengupta 1991). In being able to tap into the rich case-study literature, however, we also need to move beyond the argument that each resource system, and the people that use it, is unique. At one level, that assertion is true. All humans are unique, and all human organizations are unique as well as the ecological systems to which they relate. The problem comes from assuming that there are no commonalities across cases that can be the foundation for theoretical analysis, explanations, and diagnosis. Ecologists have long dealt with complex systems that at one level are unique (e.g., individual species), but are also able to move outward to larger systems (e.g., populations or ecosystems) and find commonalities among many different species and their behaviors. Medical diagnosis of illness and potential remedies is feasible even though each individual is unique.

Often, the scholarly treatment of social phenomena as unique is the by-product of training scholars in a research strategy that focuses first on understanding the complexity of social phenomena. Qualitative-oriented scholars, such as ethnographers and historians, are usually associated with this approach. Students of this tradition are often interested in understanding how different elements fit together to constitute a case. They examine many parts and attempt to construct a representation from the interconnections among the aspects of each case. In order to be able to do so, it is necessary to acquire in-depth knowledge about the instances under study. Researchers have developed appropriate data-gathering methods and analytical tools to do so. As a result, these scholars are able to uncover complex relationships between causal conditions and outcomes, showing the role that history, context or conjunctural causation can play in social phenomena. Often, the goal of this research approach is to describe how different aspects constitute the case as a whole, which may then be compared and contrasted with other cases. Given, however, the depth of data that scholars amass about each aspect of their case, qualitative scholars frequently work with one or a few cases at a time. Because of their familiarity with the complexity and in-depth understanding of the particularities of the instances that characterize certain phenomena, qualitative scholars tend to avoid making generalizations about their findings. In fact, generalizing statements

about social phenomena is usually not the goal of qualitative research. Sometimes it is precisely the rarity of certain social phenomena, characterized by only one, two, or a handful of instances, that might attract a scholar's attention and curiosity to them in the first place (Ragin 2000, 2008).

The sole focus on such an intensive research tradition can also make it difficult to move beyond a conventional theory of CPRs and toward a more diagnostic approach to CPR management. . . . We agree that to build a diagnostic theory, it is important to better incorporate contextual factors into policy analyses. We also need to avoid falling into the presumption that all individual settings are so different from one another that all we can do is describe the intricate detail of particular settings. . . .

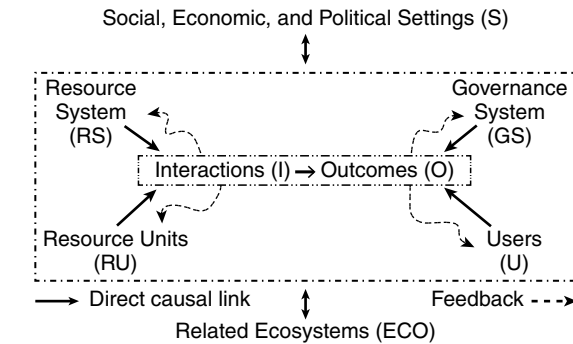
Toward a Diagnostic Theory of Common-Pool Resources

So, how can we start moving toward a diagnostic theory of common-pool resources? In the following sections, we provide an overview for how analysts can go about building a diagnostic theory to address two interrelated theoretical puzzles: (1) How do resource users self-organize or create the conditions for institutional change to overcome collective-action dilemmas? and (2) What are the conditions that enhance the sustainability of resources and the robustness of institutions over time?

A Multitier Diagnostic Framework

As a first point of departure, we draw on the multitier framework presented in a recent article in the *Proceedings of the National Academy of Sciences* on "A Diagnostic Approach for Going beyond Panaceas" (Ostrom 2007b). . . . In building a diagnostic CPR theory, scholars need to be aware of the extremely large potential set of variables that might be relevant for their studies. A promising way is to build a conceptual, ontological framework that organizes the relationships among the many variables, posits how they are causally related across scales and among themselves, where these variables are embedded within a system, and how those systems are linked to even larger systems. An ontological system is able to address the infinite regress problem, where a linguistic construction such as a concept is composed of sub-concepts, which are in turn composed of sub-concepts, and further sub-concepts.

The framework starts with a first tier of variables that scholars studying CPRs can use in studying any particular focal system, ranging in scale from a small in-shore fishery to the global commons (Figure 6.1). A scholar would first identify

FIGURE 6.1 A multitier framework for analyzing a socio-ecological system

Source: Ostrom (2007b: 15183)

which Resource System (RS) and its Resource Units (RU) are relevant for answering a particular question. These then become the focal system for analysis. . . .

To diagnose the causal patterns that affect outcomes such as successful formation of self-organization or its sustainability, one needs to incorporate a set of “second-tier” variables that are contained within the broadest tiers identified in Figure 6.1. The list of second-tier variables in Table 6.1 constitutes an initial effort to help group and classify important variables in a tiered ontology specific to the theoretical puzzles related to CPR problems posited above. It is obviously not “final,” even though many scholars across disciplines have contributed to the design of the framework over the years. As we make progress in the development of a tiered ontology, and we gain a better understanding of how concepts are embedded and related with each other, the third, fourth, and fifth tiers of the framework will be further elucidated.

Building ontologies to diagnose policy problems and to design empirical research is a necessary step toward developing better conceptual language and theories. It is important to understand, however, that an analyst does not need to include fifty or more variables when studying CPRs. No one can develop a theory or do empirical research simultaneously that includes all of the second-tier variables (or the many lower-tier variables) that may be important factors affecting particular interactions and outcomes. This is definitely not the intention of this framework. The intention is to enable scholars, officials, and citizens to understand the potential set of variables and their sub-variables that could be causing a problem or creating a benefit. When we have a medical problem, a doctor will ask us a number of initial questions and do some regular measurements. In light of that information, the doctor proceeds down a medical ontology to ask further and more specific questions (or prescribes tests)

TABLE 6.1 Second-tier variables in framework for analyzing a social-ecological system

Social, Economic, and Political Settings (S) S1- Economic development. S2- Demographic trends. S3- Political stability. S4- Government resource policies. S5- Market incentives. S6- Media organization.	
Resource System (RS)	Governance System (GS)
RS1- Sector (e.g., water, forests, pasture, fish)	GS1- Government organizations
RS2- Clarity of system boundaries*	GS2- Non-government organizations
RS3- Size of resource system*	GS3- Network structure
RS4- Human-constructed facilities	GS4- Property-rights systems*
RS5- Productivity of system	GS5- Operational rules*
RS5a. Indicators of the system*	GS6- Collective-choice rules*
RS6- Equilibrium properties	GS7- Constitutional rules*
RS7- Predictability of system dynamics*	GS8- Monitoring & sanctioning processes*
RS8- Storage characteristics	
RS9- Location	
Resource Units (RU)	Users (U)
RU1- Resource unit mobility*	U1- Number of users*
RU2- Growth or replacement rate	U2- Socioeconomic attributes of users
RU3- Interaction among resource units	U3- History of use
RU4- Economic value	U4- Location
RU5- Size	U5- Leadership/entrepreneurship*
RU6- Distinctive markings	U6- Norms/social capital*
RU7- Spatial & temporal distribution	U7- Knowledge of SES/mental models*
	U8- Dependence on resource*
	U9- Technology used*
Interactions (I)	Outcomes (O)
I1- Harvesting levels of diverse users*	O1- Social performance measures (e.g., efficiency, equity, accountability)
I2- Information sharing among users	O2- Ecological performance measures* (e.g., overharvested, resilience, diversity)
I3- Deliberation processes	O3- Externalities to other SESs
I4- Conflicts among users*	
I5- Investment activities	
I6- Lobbying activities	
Related Ecosystems (ECO) ECO1- Climate patterns ECO2- Pollution patterns ECO3- Flows into and out of focal SES	

Source: Adapted from Ostrom (2007b: 15183)

until a reasonable hypothesis regarding the source of the problem can be found and supported. When we begin to think about a particular problem, we need to begin to think about which of the attributes of a particular system are likely to have a major impact on particular patterns of interactions and outcomes. . . .

Toward a Theoretical Integration

The key to further theoretical integration is to understand how a subset of the second-tier variables—and some third-tier variables—listed below and starred in Table 6.1 interact in complex ways in specific settings to affect the basic benefit-cost calculations of a set of users (U) using a resource system (RS). We do not posit that any particular number of second- and third-tier variables discussed here always leads to success or failure in avoiding the tragedy of the commons. Rather, it is the overall combination of these factors that affects how participants judge the benefits and costs of new operational rules.¹ The attributes of resource systems that are potentially relevant include:

- Size of resource system (RS3): The CPR is sufficiently small, given communication and transportation technologies in use, that the users can acquire accurate knowledge about the boundaries and dynamics of the system.
- Productivity of system (RS5): The productivity of the CPR has not been exhausted nor is it so abundant that there is no need to organize.
- Predictability of system dynamics (RS7): The system dynamics are sufficiently predictable that users can estimate what would happen if they continued old rules or changed the rules and strategies in use.
- Indicators of the productivity of the system (RS5a): Reliable and valid indicators of CPR conditions are available at a low cost. The attributes of users that are potentially important include:
 - Leadership (U5): Some users of a resource have skills of organizing and local leadership as a result of prior organization for other purposes or learning from neighboring groups.
 - Norms/social capital (U6): Users have generally developed trust in one another so as to keep promises and return reciprocity with reciprocity.
 - Knowledge of the social-ecological system (U7): Users share knowledge of relevant CPR attributes and how their own actions affect each other.
 - Dependence on resource (U8): Users are dependent on the CPR for a major portion of their livelihood.

In analyzing a particular case, a core question is how the above factors affect the potential benefits and costs that users face in continuing present rules and strategies or changing them. One would posit that each user compares the expected net benefits of harvesting, using the old operational rules, with the benefits they expect to achieve using a new set of operational rules. Each user must ask whether their incentive to change is positive or negative.

If [the incentive to change is] negative for all users, no one has an incentive to change and no new rules will be established. If [the incentive is] positive for some users, they then need to estimate three types of costs:

- C1: Up-front costs of time and effort spent devising and agreeing upon new rules;
- C2: The short-term costs of implementing new rules; and
- C3: The long-term costs of monitoring and maintaining a self-governed system over time.

If the sum of these expected costs for each user exceeds the incentive to change, no user will invest the time and resources needed to create new institutions. . . .

Obviously, if one could obtain reliable and valid measures of the perceived benefits and costs of collective action, one would not need to examine how diverse resource systems and user characteristics affect likely organization. Gaining information about specific benefits and costs perceived by users at the time of collective-action decisions is, however, next to impossible. Thus, gaining information about the attributes of the resource system and the users, listed above, is an essential step in increasing our theoretical understanding of why some groups do overcome the challenge of collective action and others do not.

In field settings, everyone is not likely to expect the same costs and benefits from a proposed change. Some may perceive positive benefits after all costs have been taken into account, while others perceive net losses. Consequently, the collective-choice rules (GS6) used to change the day-to-day operational rules related to the resource affect whether an institutional change favored by some and opposed by others will occur. . . .

The collective-choice rule used to change operational rules in field settings varies from reliance on the decisions made by one or a few leaders, to a formal reliance on majority or super-majority vote, to reliance on consensus or near unanimity. If there are substantial differences in the perceived benefits and costs of users, it is possible that [a coalition of] users will impose a new set of rules that strongly favors those in the winning coalition and imposes losses or lower benefits on those in the losing coalition (Thompson *et al.* 1988). If expected benefits from a change in institutional arrangements are not greater than expected costs for many of the relevant participants, however, the costs of enforcing a change in institutions will be much higher than when most participants expect to benefit from a change in rules over time.

. . . This analysis is applicable to a situation where a group starts with an open-access situation and contemplates adopting its first set of rules limiting access. It is also relevant to the continuing consideration of changing operational rules over time.

for the Sustainability of Self-Organization

. . . [L]et us address the question of the sustainability of such self-organized systems. While some self-governed CPR systems are capable of surviving long periods of time, others falter and fail. The particular set of rules used by long-surviving, self-governing systems varies substantially from one another (Schlager 1994; Tang 1994; Ostrom 2005). After working with Schlager and Tang on the development of the CPR database, coding an extensive set of case studies of fishery and irrigation systems around the world (described in Ostrom *et al.* 1994), Ostrom tried to identify specific rules associated with robust systems. She searched a large number of cases to find specific institutions, such as government, private, or communal ownership, that were close to universally successful. After an extensive search and study, no specific set of rules was found to be associated with long-surviving CPR institutions. Instead, she proposed a set of eight design principles (listed in Table 6.2). Most of these principles are present in well-documented, long-lasting systems and are missing in failed systems.² Long-term sustainable

TABLE 6.2 Design principles illustrated by long-enduring common-pool resource institutions

1. Clearly Defined Boundaries: Individuals or households with rights to withdraw resource units from the common-pool resource, and the boundaries of the common-pool resource itself, are clearly defined.
2. Congruence: A. The distribution of benefits from appropriation rules is roughly proportionate to the costs imposed by provision rules. B. Appropriation rules restricting time, place, technology, and quantity of resource units are related to local conditions.
3. Collective-Choice Arrangements: Most individuals affected by operational rules can participate in modifying operational rules.
4. Monitoring: Monitors, who actively audit common-pool resource conditions and user behavior, are accountable to the users or are the users themselves.
5. Sanctions: Users who violate operational rules are likely to receive graduated sanctions (depending on the seriousness and context of the offense) from other users, from officials accountable to these users, or from both.
6. Conflict-Resolution Mechanisms: Users and their officials have rapid access to low-cost, local arenas to resolve conflict among users or between users and officials.
7. Minimal Recognition of Rights to Organize: The rights of users to devise their own institutions are not challenged by external governmental authorities.
For common-pool resources that are parts of larger systems: 8. Nested Enterprises: Appropriation, provision, monitoring, enforcement, conflict resolution, and governance activities are organized in multiple layers of nested enterprises.

Source: Adapted from Ostrom (1990: 90)

self-organizations tend to be characterized by the presence of most of these design principles, while fragile institutions tend to be characterized by only some of them, and failed institutions by few (Ostrom 2008b). . . .

Let us be clear, a design principle is not a synonym for a “blueprint.” We borrow the use of the term from architecture. When applied to institutional arrangements by design principle, we mean an “element or condition that helps to account for the success of these institutions in sustaining the [common-pool resources] and gaining the compliance of generation after generation of appropriators to the rules in use” (Ostrom 1990: 90). The design principles work to enhance participants’ shared understanding of the structure of the resource and its users and of the benefits and costs involved in following a set of agreed-upon rules. . . .

. . . Nested enterprises are particularly important for those CPRs that are part of larger systems, like coastal fisheries, where appropriation, provision, monitoring, enforcement, conflict resolution, and governance activities are organized in multiple institutional layers (Young 2002). . . . The importance of building appropriate nested enterprises for the sustainability of self-organization cannot be understated. In larger resources with many participants, nested enterprises that range in size from small to large enable participants to solve diverse problems involving different scale economies. In base institutions that are quite small, face-to-face communication can be utilized for solving many of the day-to-day problems in smaller groups. By nesting each level of organization in a larger level, externalities from one group to another can be addressed in larger organizational settings that have a legitimate role to play in relationship to the smaller entities.

Many variables in Table 6.1 that affect perceived costs and benefits of self-organization are strongly affected by the type of larger setting in which a resource and its users are embedded—particularly the type of resource policies adopted by the larger political regimes (S4). Larger regimes may facilitate local self-organization by providing accurate information about natural resource systems, arenas in which participants can engage in discovery and conflict-resolution processes, and mechanisms to back up local monitoring and sanctioning efforts. Perceived benefits of organizing are greater when users have accurate information about the threats facing a resource.

When the authority to make and enforce their own rules is not recognized, the costs of monitoring and sanctioning those who do not conform to these rules can be very high. The probability of participants adapting more effective rules in macro regimes that facilitate their efforts over time is higher than in regimes that ignore resource problems entirely or, at the other extreme, presume that all decisions about governance and management need to be made by central authorities. If local authorities are not formally recognized by larger regimes, it is very costly—if not impossible—for users to establish an enforceable set of rules. On the other hand, if external authorities impose rules without consulting local participants in their design, local users may engage in a game of “cops and robbers” with outside authorities.

Conclusion

In this paper, we have argued that one way in which we can go beyond Hardin's tragedy of the commons is by building a diagnostic theory of CPR management. We believe that it is fundamental to avoid falling into "panacea" or "my-case-is-unique" analytical traps. A diagnostic theory needs to be able to help us understand the complex interrelationship between social and biophysical factors at different levels of analysis. This understanding will be augmented if the rich detail produced from case studies is used together with theory to find patterned structures among cases.

When rich detail is [used] to argue that theoretical analysis focusing on more general variables is not useful, we will continue to fall into "my-case-is-unique" analytical traps. This does not enable scholars to move away from merely describing a particular case or region. Even worse, without a tested diagnostic theory, policy analysts cannot produce theoretically informed public policy that can form the basis of adaptive governance. We cannot forget, however, that uncovering patterns of commonalities and differences among cases without considering the role of context and history can lead to "panacea" analytical traps, such as those that have prevailed throughout the history of fisheries.

A quick view to such history shows that it is rich with examples of technical fixes like individual transferable quotas (ITQs), marine protected areas (MPAs), and community-based management (CBM). As Degnbol and colleagues (2006: 537) argue:

each of the fixes may alone, or in combination with other management tools, be perfectly adequate and justified in specific situations where the context and management concerns match the assumptions and properties of these tools. But when they are promoted as universal remedies, they cease to be useful tools and enter the category of technical fixes, diverting attention away from the full range of potential solutions to a particular management problem. Fixes are not likely to adequately represent the complexity of a problem nor are they likely to solve a range of problems simultaneously.

Indeed, further development and testing of a diagnostic theory will not be an easy task. . . .

NOTES

1. Researchers who are interested in understanding collective action to overcome CPR dilemmas in the field should try to obtain empirical measures for this set of variables in their efforts to understand why some groups organize and others do not. In some settings, other variables will also be important and some of these will play no role, but given the role of this set of variables in affecting the benefits and costs of collective action, they constitute an important set of variables potentially able to explain collective action successes and failures.

2. Costello *et al.* (2008) have a new analysis of fisheries that does provide strong support for a variety of Individual Transferable Quota (ITQ) systems to be associated with reduced likelihood of the collapse of valuable commercial fisheries, but the specific ways that successful ITQ systems have been designed and implemented vary substantially from each other.

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PART TWO

ECOLOGY AND THE STRUCTURE OF THE INTERNATIONAL SYSTEM



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ENVIRONMENTAL PROBLEMS ARE THE RESULT OF A COMPLEX ARRAY OF SOCIAL FORCES, including technology, political and economic institutions, social structures, and people's values. In Part Two of this book, we are particularly interested in the subset of causes that can be attributed to the structure of the international system. Scholars in international relations sometimes use the term *structure* to refer to the international distribution of power among states. For example, during the Cold War, the structure of the system was often said to be bipolar, in the sense that the United States and the Soviet Union wielded the most power in international affairs. Similarly, with the collapse of the Soviet Union, many spoke of a 'unipolar moment' of US dominance in the 1990s.

Here, however, we use the term *structure* more broadly, to refer to the relatively stable, unchanging characteristics of world politics such as the political division of the world into sovereign states, the increasingly tightly coupled capitalist global economy, and the modern communications order built around advanced telecommunications technology and unprecedented personal mobility.¹ These relatively permanent features of the world system give shape and definition to the interactions among governments, international organizations, multinational corporations, non-governmental organizations (NGOs), citizens, and other agents of world politics.

A few aspects of system structure seem particularly important in shaping the array of global environmental problems we face and the possibilities for responding to them. The first is state sovereignty, which many scholars take to be the central feature of world politics. As the World Commission on Environment and Development famously put it in 1987, "The Earth is one, but the world is not."² Sovereignty gives individual states, at least in principle, decision-making autonomy over matters falling within their territorial jurisdiction, even when those decisions have extraterritorial consequences for the planet and its people.

The tensions between ecology and sovereignty are due in part to the fact that the boundaries of states and the boundaries of ecosystems rarely coincide, meaning that individual states cannot effectively manage some of their most serious environmental problems. Many large-scale environmental problems such as air pollution, water pollution and the spread of toxins reach across national borders. Many more, such as climate change, the decline of ocean fisheries, and damage to the planet's protective ozone layer, are rooted in planetary-scale systems—the atmosphere and oceans—that are beyond the reach of the bordered realms of states.

Despite the world's ecological interconnectedness, governments have clung tenaciously to the notion that they retain exclusive authority over the activities within their territory, including actions that affect the global environment. The primacy of state sovereignty was one of the few points on which governments could agree during the contentious 1972 Stockholm conference. This agreement was codified in the oft-quoted Principle 21 of the conference declaration:

States have, in accordance with the Charter of the United Nations and the principles of international law, the sovereign right to exploit their own resources pursuant to their own environmental policies, and the responsibility to ensure that activities within their jurisdiction or control do not cause damage to the environment of other States or of areas beyond the limits of national jurisdiction.³

Although this principle also refers to states' responsibilities, it has generally been seen as reinforcing the legal principle of sovereignty. In most instances, states have guarded this right emphatically when pressured by the global community—whether the state in question is a tropical rainforest country, such as Brazil; a builder of large dams in sensitive ecosystems, such as China; a proponent of nuclear power, such as France or Japan; or a leading emitter of greenhouse gases, such as the United States.

Some observers see global environmental challenges as leading to an erosion of sovereignty, whereby states are forced to accept restrictions on domestic actions. Others argue that international environmental cooperation is boosting the problem-solving abilities of many states, thereby reaffirming and even strengthening their sovereign authority. Is sovereignty, then, part of the problem or part of the solution? As Ken Conca points out (Chapter 7), sovereignty is more complex than simply the right of nations to do as they please or the authoritative ability of governments to act. Conca argues that sovereignty is indeed being changed by global ecological interdependence, but in many ways at once. Using the example of the Brazilian Amazon, Conca sees Brazilian sovereignty as simultaneously bounded by new international norms, broadened as the state is made the foundation for forest-protection strategies, and rendered more brittle as the enormity of the task and the likelihood of failure put the state's legitimacy at risk. Seen in this light, sovereignty is not a fixed feature of the world system but, rather, a historical social institution that may or may not successfully adapt to global ecological interdependence.

But there is more to the structure of world politics than just sovereignty. A second crucial feature is the existence of an increasingly interconnected capitalist world economy. If nature refuses to sit still for governance within national borders, so too does commerce. It has long been apparent that the world's major centers of industrial production and consumption, including the United States, Europe, China, and Japan, are not "ecologically self-contained."⁴ These regions rely upon imports of a

wide range of commodities, both as raw materials for production and as food for consumption. As a result, the core industrial regions of the world economy draw upon the “ecological capital” of the places that supply those inputs. The production that takes place in the industrialized world thus casts an ecological shadow far beyond the borders of individual industrialized countries. At the same time, when those production activities are pollution-intensive, and when the results of that production are exported, the location in which production occurs is absorbing those environmental impacts disproportionately, to the benefit of distant consumers. In some extreme instances, such as coastal-zone oil production in the Niger Delta or military-nuclear activity in the western United States, we may conceive of these production zones as a type of “sacrificial landscape” despoiled by the needs and power of distant actors.⁵

In Chapter 8, Judy Shapiro recounts how China’s economic boom reflects both of these effects: the casting of an ecological shadow far beyond its borders and the sacrificing of environmental health to service the needs and desires of distant trade partners and consumers. Notice the difference between her analysis and a narrowly sovereign-state perspective, in which a unitary entity called “China” is personified as an actor—and often described as threatening global environmental stability from the sheer scope and pace of its growth. By recognizing that this entity called “China” is embedded in global-scale processes of resource extraction, production, and exchange, we gain a much more detailed picture of who benefits, who loses, and where responsibility can be said to reside.

To be sure, we have had a world-scale economic system for several centuries now, since at least the dawn of the colonial era. Nevertheless, economic interconnectedness has deepened and broadened dramatically by the increasing mobility of goods, services, money, people, technology, ideas, and symbols—the phenomenon we refer to as globalization. Economic globalization has several distinct features: trade liberalization, the acceleration and enhanced mobility of foreign investment, the linking of capital markets, and the development of global-scale commodity chains that crisscross national borders as they link production and consumption. What are the ramifications for the environment? One is the greater dispersion of both positive and negative repercussions: negative in the sense of invasive species, cross-border pollutant flows, and transnational criminal networks involved in hazardous waste or endangered species; positive in the sense of new knowledge, new ideas, better policy models, and new initiatives for cross-border environmental cooperation.

Globalization also seems to both lengthen and shorten social and geographic distances. On the one hand, globalization means the growth of genuinely global-scale production chains that snake in and out of nominally sovereign territories. People at any one link along that chain—whether citizens, consumers, workers, activists, or government regulators—are further “distanced” from the other links.⁶

Most modern consumers, for example, have almost no knowledge of the environmental impact attached to the products they consume, be it an automobile or an apple. On the other hand, the communications revolution forges important new linkages that shorten virtual distances. Some forms of knowledge exchange, cooperation, and coalition building have become possible on a far broader scale, as when activists work to certify and promote “sustainable” timber or food products.

The transnational character of modern capitalism raises important questions of responsibility. Who is responsible for the destruction of tropical rain forests, when the “causes” of that destruction range from the chainsaws in the hands of local timber cutters to the global economic system that creates a demand for tropical timber products? Who should be held accountable: local people, the transnational banks and corporations that carry economic practices across borders, distant people who may benefit from these activities, remote consumers of those forest products, or the structure of the world capitalist economy as a whole?

Just as state sovereignty imposes a pattern of political authority that does not correspond exactly to the underlying ecological reality, so transnational capitalism imposes patterns of economic activity that do not wholly correspond to the prevailing pattern of political authority. Both features of system structure give environmental problems an inherently transnational dimension, and both greatly complicate the prospects for global cooperation. Yet it is critical to keep in mind that these “structural” properties of the international system are not natural or automatic features of world politics—they are the results of human choice and behavior.

This distinction leads us to the question of how ideas, beliefs, and worldviews give structure to the behavior of various actors in world politics. Obviously, sovereignty and capitalism are two ideas that have had a powerful structuring influence. Some observers have argued that these two ideas are embedded in the more fundamental ethos of “modernity”—a complex set of beliefs that came to dominate European culture in the modern era and subsequently spread to the Americas, Africa, and Asia via colonialism and other manifestations of European power.⁷ Some of the principal ideas that make up the modern worldview involve beliefs about the autonomy of the individual, the power of science and technology, the desirability of increased consumption, and the inevitability of progress. Thus, the ideological bedrock of modernity is as central a feature of world politics as the political structure of state sovereignty and the economic structure of global capitalism.⁸

But not all actors embrace the dominant social paradigm. Indeed, many environmentalists argue that environmentalism is a social movement that rejects core features of the dominant paradigm. Is this the case? Does environmentalism transcend the limits of state sovereignty, oppose the unfettered operation of global capitalism, and reject many central tenets of the modern worldview? Is it possible the idea of environmentalism is fostering a new global structure: a network of individuals and groups with an *antisystemic* orientation in the sense that they reject

many values and preferences of the dominant social paradigm?⁹ Or is environmentalism better understood as a set of ideas that fits comfortably within the confines of a statist, capitalist, modernist world? These questions are hotly debated by environmentalists and their critics, and there may be no single answer: the environmental movement consists of a patchwork of groups with widely differing goals and views, working at levels ranging from local to global.

As Parts Four, Five, and Six of this book will make clear, the diversity of ideas driving various forms of environmental advocacy can make collaboration among environmentalists as difficult as collaboration among sovereign states. Nevertheless, the environmental movement has emerged as a force to be reckoned with in international affairs. Environmental NGOs and movement groups change world politics when they engage in domestic political struggles, build transnational networks, and promote large-scale sociocultural change.¹⁰ Consider the example of Kenyan environmental and antipoverty activist Wangari Maathai. Maathai was a Kenyan academic-turned-activist-turned-parliamentarian who became famous around the world for her efforts to protect forests and their people. In this section we include Maathai's acceptance speech when she was awarded the Nobel Peace Prize in 2004 (Chapter 9), making her the first African woman to receive the award. Her selection was controversial given her image as an "environmentalist" rather than as a figure central to the annals of war and peace. But her work bridging environmental protection, positive social change, and political transformation was an early exemplar of the concept of "environmental peacebuilding" (see Part Five). Although Kenyan forest politics in Maathai's time (she died in 2011) differed substantially from the early generation of indigenous activists we met in Part One, some similar themes are apparent: the emphasis on people's livelihoods, the centrality of struggle, and the challenges of organizing and mobilizing a sustained movement. Maathai's experience also points to the significant role of gender dynamics (see also Part Six).

Tellingly, even as economic globalization has intensified pressures on many local communities and spawned the sort of activism characteristic of the movement Maathai led, so too has it promoted growing transnational linkages among activists with a common cause. Recognizing that struggles to determine the future of resource use, livelihoods, community, and environmental quality have a transnational dimension, many networks, coalitions, and full-blown social movements have sprung up linking activists across borders.¹¹ Networked activists of this sort have used many different strategies and tactics to promote their causes: they lobby, protest, boycott, conduct public information campaigns, identify alternatives, cultivate culture shifts, and engage in direct action against polluters and other targets. In Chapter 10, Raul Pacheco-Vega provides a case study of environmentalism across borders, centered on the North American Free Trade Agreement (NAFTA). Pacheco-Vega pays particular attention to one element in the activist repertoire, documenting how activists in Mexico, Canada, and the US share knowledge as a

means of exercising leverage over governments and corporate actors. He argues that activists "astutely use a broad array of strategies to countervail the lobbying brute force of their industry counterparts." As a result, he argues, they have been able to wield more power and influence than one would expect, strengthening and shaping environmental regulatory processes.

If a sustained global movement of environmentalism is to exert political power, it will be because movement groups as diverse as those seen in these examples can find ways to establish effective and durable international networks to coordinate efforts, exchange information, and pool resources. The barriers to such cooperation are formidable: a lack of resources compared to those of the forces they oppose; the frequent opposition of governments, corporations, and other powerful actors; conflicting viewpoints on goals and means; and unequal power between relatively well-heeled and influential groups that lobby in the world's power centers and some of the less institutionalized, grassroots groups of both the North and the South. Nor can we assume that international environmentalism automatically produces environmental or social benefits: as the letters from the Coordinating Body for the Indigenous Peoples' Organizations of the Amazon Basin (COICA) in Part One showed, and as the environmental justice essays in Part Six will underscore, there have been troubling cases in which transnational environmental groups have sometimes sought to preserve, say, Latin American forests or African wildlife in ways that fail to involve local communities, perhaps even contributing to the continued oppression of such communities.

Despite these obstacles and potential pitfalls, there have been examples of effective international networking among environmentalists, as in the case of the internationally coordinated campaigns to change the environmental practices of the World Bank or to confront unfettered trade liberalization. Moreover, the activities of transnational environmental networks need not be limited to lobbying efforts by well-heeled organizations with access to power. As American academic Ronnie Lipschutz suggests:

The notion of "civil society" is one with a long history, but it generally refers to those forms of association among individuals that are explicitly not part of the public, state apparatus, the private, household realm or the atomistic market. Civil society is important in global politics in that it is a sector of the state-society complex where social change often begins. This does not mean that global civil society is a unity; it is riven by many divisions, more than one finds in even the international state system. Nonetheless, there are segments of this global civil society that are oriented in ways that specifically promote social and political change.¹²

Whether it makes sense to extend to the global realm the idea of "civil society," which originated with the study of domestic politics in industrial democracies, remains the subject of much debate. But even for skeptics, the idea serves as an

important reminder that the state is not the sole or even the primary source of political, social, and cultural change.

Thinking Critically

1. Are the problems confronting the Brazilian state in the Amazon applicable elsewhere? Is the pattern of transformation of Brazilian sovereignty hypothesized in Conca's essay likely to be found on a broader scale? What allows sovereignty to endure in the face of such pressures?
2. Does globalization promote or inhibit international environmental cooperation? Which seems to be growing more quickly—the pressures on countries to solve problems collectively or the loss of control in an increasingly transnationalized world economy?
3. Is Wangari Maathai describing a struggle similar to that experienced by COICA (Part One)? What are the constants and what are the variables? In other words, what aspects of these movements, their obstacles, and the context in which they operate are likely to be inherent in such struggles? What aspects are likely to be place-specific?
4. What forces push people to mobilize politically? What gives citizen environmental activism its power? What limits its power?
5. Do the cases of citizen action discussed here provide evidence for the emergence of a global civil society? Or do they describe locally grounded political struggles that have little in common beyond occasional, expedient cooperation?
6. How persuasive is Pacheco-Vega's evidence that North American environmentalists have exerted surprisingly significant leverage around NAFTA? What gave environmentalists power in this case? Would the strategy and tactics seen here work on other transnational environmental problems, or in other institutional contexts? What conditions are necessary for this approach to be effective?

NOTES

1. The term *structure* is used in this sense in Ken Conca, "Environmental Change and the Deep Structure of World Politics," in Ronnie D. Lipschutz and Ken Conca, eds., *The State and Social Power in Global Environmental Politics* (New York: Columbia University Press, 1993).

2. World Commission on Environment and Development (WCED), *Our Common Future* (New York: Oxford University Press, 1987), p. 27.

3. Quoted in Mostafa K. Tolba, Osama A. El-Kholy, E. El-Hinnawi, M. W. Holdgate, D. F. McMichael, and R. E. Munn, *The World Environment, 1972–1992: Two Decades of Challenge* (London: Chapman & Hall, 1992), p. 808. This principle was reiterated 20 years later at the 1992 Earth Summit; see “Rio Declaration on Environment and Development,” United Nations Conference on Environment and Development, UN Doc. A/CONF.151/5/Rev. 1 (1992).

4. Jim MacNeill, Pieter Winsemius, and Taizo Yakushiji, *Beyond Interdependence* (New York: Oxford University Press, 1991), p. 58. See also Andrea Collins and Andrew Flynn, *The Ecological Footprint: New Developments in Policy and Practice* (Cheltenham, UK: Edward Elgar, 2015).

5. Valerie Kuletz, “Invisible Spaces, Violent Places: Cold War Nuclear and Militarized Landscapes,” in Nancy Lee Peluso and Michael Watts, *Violent Environments* (Ithaca, NY: Cornell University Press, 2001).

6. See Ken Conca, “Consumption and Environment in a Global Economy,” *Global Environmental Politics* vol. 1 no. 3 (Summer 2001): 53–71.

7. On the role of colonialism in promoting the spread of European values, see Edward Said, *Culture and Imperialism* (New York: Random House, 1993).

8. This theme is developed in Conca, “Environmental Change and the Deep Structure of World Politics.”

9. The term *antisystemic* as used here is derived from G. Arrighi, T. K. Hopkins, and I. Wallerstein, *Antisystemic Movements* (London: Verso, 1989).

10. Paul Wapner, “Politics Beyond the State: Environmental Activism and World Civic Politics,” *World Politics* 47 (April 1995): 311–340.

11. A classic work theorizing how such networks form and seek influence is Margaret Keck and Kathryn Sikkink, *Activist Beyond Borders: Advocacy Networks in International Politics* (Ithaca, NY: Cornell University Press, 1998). See also the special edition of the journal *Environmental Politics* on “Environmental NGOs at the Crossroads” (vol. 27 no. 6, 2018).

12. Ronnie D. Lipschutz with Judith Mayer, *Global Civil Society and Global Environmental Governance: The Politics of Nature from Place to Planet* (Albany: SUNY Press, 1996), p. 2.

RETHINKING THE ECOLOGY- SOVEREIGNTY DEBATE

KEN CONCA*

How do mounting international pressures for environmental protection affect state sovereignty? Does it even make sense to speak of sovereignty in a world marked by tight ecological interdependence, massive transboundary pollutant flows, and severe threats to key global environmental services? How will the evolving roles, rules, and understandings that have institutionalized sovereignty adapt to these new ecological realities?

These questions are of particular concern in the South, where the full range of rights and opportunities promised by sovereignty have rarely been realized to the extent enjoyed in the industrialized world. When Third World governments have voiced resistance to the institutionalization of new standards of environmental behavior, they have often done so on the grounds that such rules violate their sovereignty.¹ In this paper I present a critique of prevailing perspectives on the sovereignty-ecology link. Though the focus is not exclusively on the Third World, the critique illustrates the limited utility of prevailing formulations in a Third World context. I also point the way toward some elements of an alternative conceptualization, and illustrate these propositions with a brief discussion of the case of the Brazilian Amazon.

Two Perspectives on Ecology and Sovereignty

My reading of the ecology-sovereignty literature is that two perspectives dominate the debate. The first argues that we are in fact seeing an erosion or weakening

*Ken Conca, "Rethinking the Ecology-Sovereignty Debate." *Millennium* vol. 23 no. 3 pp. 701-711. Copyright © [1994] Sage. Reprinted by permission of SAGE Publications. <https://doi.org/10.1177/03058298940230030201>

of sovereignty. Environmental concerns are said to be erecting new and effectively global standards for state behavior. These new global standards are said to manifest themselves in several ways: in formal dealings among states (such as the creation of international environmental regimes); in rules of environmental conditionality, attached to the actions of international organizations such as the World Bank;² in the evolving norms of a growing body of international environmental law;³ and in the political pressures brought to bear on governments by increasingly transnational environmental movements, citizens' networks, and non-governmental organizations [NGOs].⁴ Such pressures and constraints are unevenly applied and imperfectly enforced, to be sure; but they are beginning, it is claimed, to constrain the autonomy of state action by imposing limits on the menu of policy choices available to states.

This perspective is sometimes, though not inevitably, tied to the view that sovereignty and ecology are inherently at odds. Because ecosystems and environmental processes do not respect state borders, sovereignty itself becomes a key institution of global-scale environmental destruction. It creates a scale for decision-making, adjudication, and authority that does not coincide with fundamental ecological realities, and thus frustrates ecologically responsible management.⁵ These claims about eroding sovereignty can be contrasted with a second identifiable point of view in the literature. Here the claim is that international processes and, in particular, the emergence of multilateral institutions for environmental protection do not inevitably erode state sovereignty and may even strengthen it. By placing states at the center of institutional responses and strengthening their capacity to act collectively, it is argued, the menu of choices available to states is being expanded, not restricted.

For example, Levy, Keohane, and Haas have argued that although environmental regimes may limit the scope of governments to act unilaterally, they also facilitate collective state-based problem solving.⁶ The authors draw a distinction between "operational" sovereignty, defined as the legal freedom of the state to act under international law, and "formal" sovereignty, defined in terms of the state's legal supremacy and independence.⁷ International environmental institutions constrain operational sovereignty, but formal sovereignty remains largely intact. Implicit in this reasoning is the argument that enhanced problem-solving capabilities more than offset the external limitations on the scope of state authority.

A Critique

These two perspectives inevitably embody normative stances toward the state. In one view, the state is a large part of the problem, whereas in the other it is the foundation for solutions—or, at the very least, a central feature of the terrain on which solutions will have to be built. We can also examine them, however, as

claims of what is happening to sovereignty, for better or for worse. Here, although they do make different sets of claims, the two are not necessarily irreconcilable. It is perfectly plausible, for example, that the scope of state autonomy is being narrowed (as the first claim would suggest) at the same time that the problem-solving capacity of states is increasing (as the second claim would argue).

However, before concluding that this represents the full range of consequences for sovereignty in an ecologically interdependent world, several observations are in order. The picture sketched above is in fact seriously incomplete, particularly when applied to contemporary international politics in the Third World. I hypothesize that for many Third World states, sovereignty is in fact being transformed as a result of global ecological interdependence, but not in the manner sketched by either of the above claims, or even by the net effect of the two taken together.

I base this hypothesis on two sets of observations. First, both arguments fail to disaggregate what is in fact a complex and highly unevenly distributed set of international pressures on states to solve environmental problems. Second, both are based on an incomplete characterization of sovereignty itself. They only partially capture what has made sovereignty endure over time, and therefore misrepresent what sovereignty has actually meant for most states.

Let me stress here that the point is not to set up two straw arguments for easy dismissal. There are important insights in both of these perspectives. But they also appear to miss some potentially important effects on sovereignty, in part because their conceptual approaches to sovereignty limit the range of hypotheses they entertain.

Characterization of Environmental Pressures on the State

One problem is an overly general representation of the types of environmental pressure states feel. Clearly, governments do feel mounting pressure to respond to international environmental problems. Cross-national comparisons of public opinion data show consistently high levels of public awareness and concern.⁸ While not all peoples, classes, regions, and cultures define the problem in exactly the same terms, widespread concerns about environmental quality cut across simplistic distinctions between rich and poor, North and South, overdeveloped and underdeveloped.⁹ The growth of pressures on states can also be seen in the contrast between the 1992 UNCED [UN Conference on Environment and Development] in Rio de Janeiro and the UN Conference on the Human Environment, held two decades earlier in Stockholm. Stockholm was a gathering of 114 nations but was attended by only 2 heads of state; Rio represented an assemblage of more than 150 nations, including over 100 heads of state. The 134 non-governmental organizations at Stockholm were dwarfed by the 1,400 non-governmental organizations and more than 8,000 journalists from 111 countries who attended the Rio conference.¹⁰

If it is clear that pressures are mounting, it is also clear that there have been consequences for the range of choices available to states. It has become much more difficult (though by no means impossible) to construct large dams, indiscriminately export toxic wastes, clear-cut forests, traffic in endangered species, or emit unlimited quantities of chemicals that destroy the ozone layer. That governments of both the North and the South so often see these limits (at least when applied to them) as interference in their sovereign right to use natural resources as they see fit indicates a strong perception that the consequences are real.

However, while we may very well be seeing the birth of a generalizable, universal norm of environmental responsibility, the specific pressures on states have thus far followed a much more selective pattern. First, to the extent that a new norm is emerging, it is manifest in a highly segmented set of activities, including the lobbying of scientists, the pressure of public opinion, the calculations of governments, and the targeted political pressures of eco-activists. There is no reason to suppose that these all carry the same implications for sovereignty, or even push in the same general direction.

Second, regardless of their origin, the pressures states are feeling typically flow through multiple channels, including intergovernmental relations, dealings with international organizations [IOs], transnational linkages among environmental groups, and the workings of the media. Can pressures to join state-based international regimes be assumed to affect sovereignty in the same manner as pressures to accept the World Bank's environmental conditions on lending?

Third, current pressures clearly do not touch all states equally. Instead, what we have seen is something akin to assigning ecological pariah status to specific states on specific issues, whether it be Brazil and Indonesia in the case of tropical deforestation, China and India on dam construction, Japan on the trade in endangered species, or the former Soviet Union on reactor safety. Whatever the implications for sovereignty, they are unevenly distributed.

Fourth, and perhaps most important, responding to international environmental pressures can create resources and purchase legitimacy at the same time that it may constrain the menu of policy choices. This is in fact generally acknowledged when the gains for states are directly linked to efforts at environmental management. But these are not the only plausible effects; some of the resources gained or legitimacy purchased may speak to more general questions of the state's legitimacy and capacity to govern.¹¹

Conceptions of Sovereignty

A second set of problems involves the specific conceptualization of sovereignty itself that underlies these perspectives. One problem is that both sovereignty and the challenges to it are viewed in essentially functionalist terms. By this reasoning, states exist because they perform key functions better than alternative forms of

social organization, and pressures on the state exist because one increasingly important function—environmental protection—is being performed inadequately. The problems with functionalist arguments are well known, and stem from their *post hoc* character: causes are imputed from observed effects.¹² Problems emerge when the function is incorrectly specified—that is, when causal significance is given to an observed effect that is in reality an unintended consequence or less-than-central function. A straightforward example: the notion that international environmental regimes exist because states want to solve environmental problems may in fact be wrong. Regimes may be thrust on states by increasingly powerful non-state actors, or they may serve other fundamental purposes of state, e.g., those having to do with state legitimacy and perceptions of effectiveness. Functionalist interpretations based on each of these widely differing “functions” would lead us to dramatically different conclusions about the implications for sovereignty.

The conceptualization of sovereignty is also excessively general. Sovereignty in historical practice has carried with it the presumption of a complex bundle of rights: equality among states, non-intervention, exclusive territorial jurisdiction, the presumption of state competence, restrictions on binding adjudication without consent, exclusive rights to wield violence, and the embeddedness of international law in the free will of states.¹³ There is no reason to expect that a particular set of international pressures affects these various component norms of sovereignty equally or in parallel fashion. Indeed, to the extent that ecological interdependence highlights tensions among such norms, one would expect just the opposite—that some normative pillars of sovereignty can be strengthened as others are undermined or eroded. Consider transboundary pollutant flows: institutional mechanisms to control them could erode the sovereign right to exclusive territorial jurisdiction, but at the same time strengthen aspects of the principle of non-intervention, if the flows themselves are viewed as unjustified interventions.

Third, the view of sovereignty is largely ahistorical. What rules, practices, or beliefs reproduce sovereignty as an institution? Has this process of reproduction been broadly similar in all entities we regard as states, or is there more than one way to reproduce oneself as a sovereign entity? Are there differences in what sovereignty has meant for states whose organized existence is largely a product of colonialism? Does the territorial basis of the state differ fundamentally in frontier societies or in multiethnic ones? Clearly, the answers are unlikely to be uniform across time and for all states. This suggests that we cannot describe in universal terms either the processes rendering states sovereign or the way in which they may be changing as a result of ecological interdependence. Sovereignty as a global institution changes because of what happens to different states over time, at different rates and in different ways.

These weaknesses—functionalist logic, excessive generality, and ahistorical character—are symptoms of more fundamental conceptual problems. One of these is the unresolved tension over whether sovereignty represents, as Robert Jackson

has put it, “a norm or a fact.” In other words, is sovereignty based on the “fact” of material capabilities that enable organized entities to claim standing as states? Or is it based on the selective extension of recognition as a legitimate state? As Jackson and others have argued, we need to understand sovereignty as at once *both* “fact” and “norm.”¹⁴ The perspectives examined here tend instead to fall on one or the other side of this divide. The ecology-erodes-sovereignty view typically frames sovereignty as a formal legal right, de-emphasizing the foundations of the state that make it able to claim domestic authority and international standing. Alternately, the claim of enduring sovereignty in the face of environmental pressures stresses states as problem-solvers (albeit with varying degrees of capability). It thus emphasizes sovereignty as the maintenance of a certain set of capabilities with which to act.

Finally, and perhaps most importantly, sovereignty in both perspectives is essentially conceived as freedom from external constraints on state action and choice. This one-dimensional view overlooks the fact that sovereignty looks inward as well as outward. It finds its basis not only in autonomy relative to external actors, but also in the state’s jurisdictional power over civil society. According to Ruth Lapidoth:

Usually, a distinction is made between the internal and external aspect of sovereignty. The former [internal] means the highest, original—as opposed to derivative—power within a territorial jurisdiction; this power is not subject to the executive, legislative, or judicial jurisdiction of a foreign state or any foreign law other than public international law. The external aspect of sovereignty underlines the independence and equality of states and the fact that they are direct and immediate subjects of international law.¹⁵ John Ruggie’s definition of sovereignty as “the institutionalization of public authority within mutually exclusive jurisdictional domains” also captures this internal dimension.¹⁶

Historically, the ability to control rules of access to the environment and natural resources—to define who may alter, and to what extent, which specific natural materials, systems, and processes—has been a central component of state authority and legitimacy.¹⁷ Thus the full effects of international environmental pressures on state sovereignty as a collective institution cannot be understood without examining this inward-looking dimension. This is particularly so for much of the South, given the legacy of colonialism and the orientation of so many Third World political economies toward commodity exports.

Like the outward-looking dimension, the state-society dimension of sovereignty represents both fact and norm. It demands not only some minimal level of social recognition of the state’s legitimacy, but also a complex bundle of state capabilities. Joel Migdal, for example, disaggregates the notion of state capacity into such varied components as the penetration of civil society, the regulation of social relations, the extraction of resources from civil society, and the use of those resources for defined state purposes.¹⁸ International pressures, whether manifest in state-state, state-IO, or state-NGO interactions, are unlikely to affect these varied capabilities

equally. Moreover, state capacity and social legitimacy may be at odds, as appears to be the case when coercive means are used to “protect” ecosystems from local use and encroachment.¹⁹

Toward an Alternative View of the Sovereignty–Ecology Link

What would an alternative conceptualization look like? Clearly, it will require a multidimensional, less readily operational definition of sovereignty. Sovereignty must be conceived as having both external and internal dimensions; it must be seen as having a basis in both norms of recognition and material capabilities; and both its normative and material bases must be seen as consisting of multifaceted bundles of norms and capabilities, respectively. These complexities should make us humble about drawing general conclusions outside the context of specific cases. A corollary is that there is little to be gained from speaking in general unified terms about sovereignty being “strengthened,” “eroded,” or “maintained,” either with regard to specific states or the institution of state sovereignty as a whole.

The multiple dimensions of sovereignty should not, however, automatically lead us down the path of static 2×3 matrices and reductionist thinking. The focus should be on whether and how *specific* state actions and *specific* aspects of state–society relations create the conditions of authority, legitimacy, and capability necessary for states to make effectively sovereign claims. When the Brazilian government builds a road through the jungle, this must be seen as an act that speaks to each of the dimensions of sovereignty alluded to above: legitimacy as well as capability, international as well as domestic. If the idea of a two-level game is an apt metaphor (and it may not be, for this reason), it is a game in which most of the moves resonate on both boards at once.

An Example: The Brazilian Amazon

Consider the example of the Brazilian Amazon, perhaps the single most widely noted and contentious case to date in the ecology–sovereignty debate.²⁰ Before the ink had dried on the major agreements signed at the 1992 UNCED Conference in Rio de Janeiro, Brazilian diplomat Marcos Azambuja offered the following analysis:

Brazilian interests are reinforced in the majority of the documents. At no time did we face opposition to our basic interests. . . . [W]e came out of the negotiations without the slightest scratch to our sovereignty.²¹

As evidence, the ambassador could have pointed to the conference declaration of principles on environment and development. Here the sovereign right of states to "exploit their own resources" is reaffirmed using exactly the same language enshrined in the well-known Principle 21 of the Stockholm Conference 20 years earlier.²² Or, the ambassador could turn to the specific agreements on climate and biodiversity, which did little to contradict this principle.

The absence of "scratches" on the wall of Brazilian sovereignty was particularly noteworthy with respect to the issue of predominant concern to the Brazilians at the conference: the fate of tropical rain forests, and of the Amazon in particular. Efforts to scratch that wall, by constructing a regime for the preservation (or at least controlled depletion) of the world's remaining rain forests, were soundly defeated. Key points of disagreement included whether to link the regime specifically to an agreement on climate change and whether to cover temperate as well as tropical forests.

But walls have two surfaces, and in the Brazilian case the inside surface has suffered more than a slight scratch. Consider the following testimony of one veteran field researcher in the Amazon:

Wherever one looks in the Amazonian economy, the state is in retreat: unable to finance tax breaks or build highways without the aid of multilateral banks, unable to include more than one per cent of the rural population in official colonization schemes, unable to control land titling or land conflicts, unable to register or tax the greater part of the Amazonian economy, unable to enforce federal law on more than a sporadic basis.²³

The irony is that this assessment of the limits of state capabilities comes at a time when the Brazilian state has been placed squarely at the center of most schemes for sustainable development in the region. Clearly, some state actions have been proscribed by international pressures. But, far from prohibiting state action, the net effect of international pressures has been to stimulate a more active, interventionist state role in the region, under the rubric of supporting sustainable development. Far from simply "eroding" sovereignty, these pressures strengthen the presence of the state in the region and in Brazilian society as a whole. They also create opportunities for state actors to pursue long-standing goals having little to do with ecology. In the specifically Brazilian case such goals include the control of remote territories or indigenous peoples, the demarcation and fortification of Brazil's borders, and the reorganization of existing patterns of land tenure.²⁴

These extensions of the state are not without cost, however; they can only be realized at substantial risk to state legitimacy, given the enormous complexity of the task of sustainable development and the limited effectiveness of many state actions as sketched in the above quote. Moreover, the risk to state legitimacy may extend beyond the relatively narrow realm of environmental management. Consider the

following commentary in the leading Brazilian newsweekly, *Veja*, discussing the highly publicized murder of a group of indigenous people at the Haximu settlement: “The Haximu massacre shows that, in reality, these minorities [indigenous peoples] are protected with the same courage and efficiency that guard the public hospital network and the pensions of the retired.”²⁵ The state’s inability to protect the lives and land of indigenous peoples is being linked directly to its other widely perceived inadequacies.

Under such circumstances, it means little to say that Brazilian sovereignty over the Amazon is eroding, strengthening, or maintaining the status quo. Rather, it seems that we are seeing a more complex, dynamic process in which sovereignty is simultaneously being narrowed in scope (by international prohibitions), deepened (by strengthening state capacities and state penetration of civil society), and rendered more brittle (by eroding state legitimacy).

Conclusion

... A strong case can be made for both of the perspectives sketched at the outset of this paper. Clearly, the freedom of states to undertake, promote, or tolerate processes of environmental degradation is being limited, and many of the limits emanate from sources external to the state itself. At the same time, there is little doubt that new international institutions have made some governments more effective problem solvers (although we should always be careful about assumptions that the problem to be solved is, from the point of view of state actors, environmental and not political). That both effects could be happening at once is testimony to the multifaceted character of sovereignty.

Whether these represent the full set of effects is another matter. Consider an analogy to the origins of the modern welfare state. States were faced with a new set of challenges (macroeconomic stabilization, creating a social safety net, and so on). In response, states evolved new institutions, some national and some international, and in the process thrust themselves into a whole new set of state-society relationships. The consequences were hardly a lessening of the state’s penetration of civil society or a decline in the size and reach of state institutions. At the same time, however, by assuming these new tasks, state legitimacy (both domestic and international) was put substantially at risk. The entire process was of course intensely politicized and political, with both state and non-state actors seeking to turn the new agenda to maximum advantage.

Much the same process may be at work with the challenge of environmental protection. New tasks, for which states are poorly suited and to which they are often opposed, have been thrust upon them by rising social demands. This challenge renders some choices more remote, but it also creates new opportunities,

in the form of international resources for state responses and new mandates for state management and regulation. However, because most of the solutions being promulgated have a strongly statist cast, state legitimacy is put at substantial risk. A growing body of evidence suggests that participation, democracy, and legitimate authority are the keys to solving environmental problems. If so, the implications for state legitimacy may ultimately be the greatest consequence, both for sovereignty and for ecology.

NOTES

1. See, for example, the comments of the Malaysian Prime Minister, Mahathir Mohamad, at the 1992 U.N. Conference on Environment and Development (UNCED), in *Environmental Policy and Law* 22, no. 4 (1992), p. 232, and Somaya Saad, "For Whose Benefit? Redefining Security," *Ecodecisions* (September 1991), pp. 59–60. See also the "Beijing Declaration of 41 Developing Countries," 18–19 June 1991, reprinted in *China Daily* (20 June 1991), p. 4, cited in the introduction to Andrew Hurrell and Benedict Kingsbury, eds., *The International Politics of the Environment* (Oxford, UK: Clarendon Press, 1992), p. 39, note 60.

2. On environmental conditionality, see Andrew Hurrell, "Green Conditionality," Overseas Development Council Policy Paper, March 1993 (Washington, DC: Overseas Development Council, 1993).

3. See Patricia Birnie, "International Environmental Law: Its Adequacy for Present and Future Needs," in Hurrell and Kingsbury, eds., *The International Politics of the Environment*, p. 84, note 1. Birnie refers to what has been described as an emerging, bounded concept of "reasonable sovereignty."

4. On emergent global environmental values carried by transnational networks of activists and advocates, see Margaret Keck and Kathryn Sikkink, "International Issue Networks in the Environment and Human Rights," a paper presented at the 17th Congress of the Latin American Studies Association, Los Angeles, California, 24–27 September 1992. See also Kathryn Sikkink, "Human Rights, Principled Issue-networks, and Sovereignty in Latin America," *International Organization* 47, no. 3 (Summer 1993), pp. 411–441, and Ronnie D. Lipschutz, "Reconstructing World Politics: The Emergence of Global Civil Society," *Millennium: Journal of International Studies* 21, no. 3 (Winter 1992), pp. 389–420.

5. For a discussion of this view, see Hurrell and Kingsbury, "Introduction," in Hurrell and Kingsbury, eds., *International Politics of the Environment*, pp. 6–8. The authors cite the work of Richard Falk and John Dryzek as representative examples.

6. Mark A. Levy, Robert O. Keohane, and Peter M. Haas, "Improving the Effectiveness of International Environmental Institutions," in Haas, Keohane, and Levy, eds., *Institutions for the Earth: Sources of Effective International Environmental Protection* (Cambridge, MA: MIT Press, 1993), especially pp. 415–417.

7. *Ibid.*, p. 416.

8. See Riley E. Dunlap et al., “Of Global Concern: Results of the Health of the Planet Survey,” *Environment* 35, no. 9 (November 1993), pp. 6–15 and 33–39.

9. One interesting result of the study by Dunlap and colleagues was the strikingly similar pattern of environmental concerns found in polling data across twenty-four countries of widely differing income levels (see Dunlap et al., “Of Global Concern”).

10. These figures are from Peter M. Haas, Marc A. Levy, and Edward A. Parson, “Appraising the Earth Summit: How Should We Judge UNCED’s Success?” *Environment* 34, no. 6 (October 1992), pp. 7–11 and 26–33.

11. This observation points to the basically functionalist logic of much of the ecology-sovereignty debate, a theme to which I return below.

12. For a discussion of the limits of functionalist theories, see Robert O. Keohane, *After Hegemony: Cooperation and Discord in the World Political Economy* (Princeton, NJ: Princeton University Press, 1984), pp. 80–83.

13. This list is from Ruth Lapidoth, “Sovereignty in Transition,” *Journal of International Affairs* 45, no. 2 (Winter 1992), pp. 325–346.

14. Robert Jackson, *Quasi-States: Sovereignty, International Relations, and the Third World* (Cambridge, UK: Cambridge University Press, 1990), chapter 3.

15. *Ibid.*, p. 327.

16. John G. Ruggie, “Continuity and Transformation in the World Polity: Toward a Neorealist Synthesis,” in Robert O. Keohane, ed., *Neorealism and Its Critics* (New York: Columbia University Press, 1986), p. 143, as cited in J. Samuel Barkin and Bruce Cronin, “The State and the Nation: Changing Norms and the Rules of Sovereignty in International Relations,” *International Organization* 48, no. 1 (Winter 1994), pp. 107–130.

17. See Ronnie D. Lipschutz and Judith Mayer, “Not Seeing the Forest for the Trees: Rights, Rules, and the Renegotiation of Resource Management Regimes,” in Ronnie D. Lipschutz and Ken Conca, eds., *The State and Social Power in Global Environmental Politics* (New York: Columbia University Press, 1993), pp. 246–273.

18. Joel Migdal, *Strong Societies and Weak States* (Princeton, NJ: Princeton University Press, 1988).

19. For a discussion of this effect in the specific context of wildlife in Kenya and forests in Indonesia, see Nancy Peluso, “Coercing Conservation,” in Lipschutz and Conca, eds., *The State and Social Power*, pp. 46–70.

20. I discuss this case in greater detail in Ken Conca, “Environmental Protection, International Norms, and National Sovereignty: The Case of the Brazilian Amazon,” in Gene Lyons and Michael Mastanduno, eds., *Beyond Westphalia? National Sovereignty and International Intervention* (Baltimore, MD: Johns Hopkins University Press, 1995).

21. “Summit Documents Safeguard Brazilian Interests,” *Daily Report: Latin America*, FBIS-LAT-92-114-S, 12 June 1992, p. 27 (supplement); original source *O Globo*, 11 June 1992, Rio ’92 section, p. 1.

22. Principle 2: “States have, in accordance with the Charter of the United Nations and the principles of international law, the sovereign right to exploit their own resources,

pursuant to their own environmental and developmental policies, and the responsibility to ensure that activities within their jurisdiction or control do not cause damage to the environment of other States or of areas beyond the limits of national jurisdiction.” See “Rio Declaration on Environment and Development,” United Nations Conference on Environment and Development, U.N. Document A/CONF.151/5/Rev.1 (1992).

23. David Cleary, “After the Frontier: Problems with Political Economy in the Modern Brazilian Amazon,” *Journal of Latin American Studies* 25, part 2 (May 1993), pp. 331–349.

24. These themes are discussed in detail in Conca, “Environmental Protection, International Norms, and National Sovereignty.”

25. “Um Grito do Fundo da Selva,” *Veja* (August 25, 1993), p. 27. The translation is mine.

CHINA'S ENVIRONMENTAL CHALLENGES

JUDITH SHAPIRO*

Environmental Justice: International Dimensions

We now turn to the international dimensions of environmental justice, with China serving as both an importer and exporter of environmental harm. In recent decades, the trend toward state-led environmental degradation has intensified and internationalized, as China's thirst for resources, from timber and wildlife to fossil fuels and minerals, has led to an increase in environmental degradation in places within and beyond national boundaries....As the world's manufacturing hub, China has attracted and borne the costs of pollution for many developed countries and increasingly, within China, pollution is being pushed out of wealthy Eastern cities and into rural areas and the vulnerable West. While many international corporations argue that they adhere to more stringent environmental and labor standards than do Chinese domestic companies, anti-globalization activists claim that the developing world is in a "race to the bottom" as they compete against each other for foreign capital. By 2011, according to the Chinese Statistical Yearbook, foreign-owned companies accounted for 13.4 percent of industrial output; with foreign investment or joint ventures included, the total is 25.9 percent. Debate over whether such enterprises are generally positive or negative for China's environmental performance remains unresolved, with some evidence suggesting that much depends on whether the multinational corporations originate from

*Excerpted from Judith Shapiro, *China's Environmental Challenges* (Polity, 2016.) Reprinted with permission.

low-standard or high-standard countries (Stalley 2010). When the problem of subcontracting to middlemen is included, as already mentioned with respect to the shoe and iPad manufacturers targeted by Greenpeace, it becomes even more difficult to make judgments on these firms' environmental impact. Such subcontractors are often from Hong Kong or Taiwan and have been associated with sweatshop-like conditions and sub-standard pollution controls.

As we reflect on how environmental harm is displaced to the vulnerable, we would be remiss not to consider one of the most dramatic examples of how the West exports some of its toxic materials to China in the form of post-consumer waste. The electronics recycling business, which is centered in a cluster of four small villages in southern Guangdong Province near Hong Kong, has some of the highest concentrations of toxic materials in the world. This is an issue of wide discussion and mobilization for the international environmental community. The Basel Action Network (BAN) is a non-governmental organization dedicated to exposing the environmental injustices inherent in the globalization of the toxic waste trade, and is based on the 1989 Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and their Disposal. BAN activists have been working for more than a decade to stop the export of electronic wastes to China, especially from the United States (The U.S. has signed but not ratified the Basel Convention). International awareness of the e-waste problem was raised significantly when CBS broadcast an episode of "Sixty Minutes" about the impact of this trade on the villages of Guiyu. The villages, which once produced rice, have become a dumping ground for the world's electronic detritus. The waste arrives by the container-load via Hong Kong. Villagers disassemble and sort components from computers, televisions, cell phones, and other electronics. Many of the chemicals are highly toxic, especially when burned or soaked in acid baths during the deconstruction. Small children and even babies play in mountains of waste as their parents extract minuscule quantities of copper, gold, chips, and other valuables for a meager living. Dioxin levels in Guiyu are the world's highest, while lead, chromium, tin, PVC flame retardants (which contain dioxin and furan), and other toxics also leach into the groundwater and fall from the air. Although laws in the U.S. and other developed countries as well as China forbid the export and import of these materials, and virtuous citizens in the West often go to great lengths to ensure that their toxic electronics are disposed of in what they believe to be a responsible fashion, the illegal trade is highly lucrative and loopholes abound. Indeed, Greenpeace estimates that 50 to 80 percent of U.S. e-waste is exported, much of it to Asia, although Africa also gets its share. The U.S. EPA is cooperating with China and other developing countries to reduce the trade and find a solution (<http://epa.gov/oia/toxics/ewaste.html>). Greenpeace, BAN, and other NGOs are pressuring electronics manufacturers to stop using the most hazardous substances in their products and have obtained commitments from some of them. However, as the worldwide consumption of electronic products continues to

explode, and the lifetimes of these products grow ever shorter with the introduction of must-have gadgets that make usable products appear to be obsolete, this problem is likely to worsen.

International impacts

....On the subject of China's international impact, some observers hold a largely positive view. They argue, for example, that Chinese aid projects are rebuilding Africa across multiple sectors, providing for schools and roads as well as energy and resources infrastructure (Brautigam 2009). Although a number of investments seem aimed at procuring resources, other projects, such as hospitals, are not as clearly directed at extraction. Chinese foreign aid balance sheets can be opaque, but broad economic and strategic interests appear to remain at the heart of many of China's decisions, some of which are resource oriented, some of which are not. Nonetheless, it is clear that many projects in Latin America, Africa, and the Middle East are focused on securing resources and energy (Dittmer and Yu 2010, Economy and Levi 2014). This may be a case of China's self-interests in markets and materials aligning with the needs of less developed countries for investment and capital. Perhaps as a response to criticisms that China is primarily interested in shoring up strategic resources across the globe, the government in 2011 released a white paper demonstrating that only about 5% of its development projects are directly related to oil and mining, while more than half focus on economic infrastructure and public facilities. This is consistent with the Chinese contention that foreign aid should be mutually beneficial (Kjøllestad and Welle-Strand 2010). This point also drew praise from analysts at the Worldwatch Institute (Bi 2011), who hailed China's approach as a "green aid" model for the world.

A darker viewpoint suggests that China's overseas development assistance projects are largely focused, if subtly so, on gaining access to resources. That was the conclusion of the Congressional Research Service (Lum et al. 2009), based on an earlier, widely cited review by the Robert F. Wagner Graduate School of Public Service at New York University. Critics suggest that China is engaging in a modern version of colonialism, offering foreign aid to build infrastructure like roads and deep-water ports to allow for easier extraction of resources. Seeking to assure a steady supply of primary materials, Chinese state-owned companies have invested heavily in infrastructure like roads and deep ports, often in the name of foreign aid. Some of these projects are funded with private capital, usually with strong government ties; a Chinese businessman with murky connections plans to build a channel across Nicaragua to rival the Panama Canal.

Some Chinese business investments, as distinct from the government's foreign aid packages, point alarmingly to resource grabbing. According to Chinese Ministry

of Commerce statistics for 2014, Chinese outward direct investment (ODI) was \$102.89 billion, among the highest in the world. China's growth rate in ODI continues to outpace the growth rate of FDI it attracts into China; an official from the Commerce Ministry predicts that China will soon become a net capital exporter. Much of that was by government owned or controlled entities, with investment in the energy, materials, and mining sectors remaining key targets. The overall impact of this activity is transforming landscapes everywhere.

China's extraction of raw materials such as timber, grain, fossil fuels, and minerals is stunning in its effects on the planet. Such extraction provides raw materials for China's domestic consumption needs, but it also provides raw materials for the massive manufacturing project China has undertaken to meet global consumption demands. Control of raw materials is also considered a good business investment by Chinese institutions and individuals looking for a place to invest their enormous wealth. As more Chinese enjoy higher incomes and demand a better standard of living, government and industry are casting about the globe for food, material inputs, economic partners, and markets. At the same time, China's own increasingly stringent environmental standards – particularly the country's celebrated, if also flouted, logging ban – have decreased damaging activities domestically, shifting pressure to other countries....China's furniture manufacturing industry still needs lumber and seeks it from forests abroad. Moreover, some provinces under pressure to clean up their air pollution are actively seeking to relocate dirty factories overseas, a new phenomenon dubbed "dirty migration."

To facilitate these investments, and despite U.S. opposition, China has led the BRICS countries to set up a New Development Bank to counter the influence of the dollar and the World Bank and IMF, with the promise of providing credit for infrastructure projects in the developing world (the U.K. and Australia have also joined). Other innovative financing mechanisms include the much-criticized "loans for oil" deals that have been signed with the governments of Angola, Ecuador, and Venezuela. We will now examine several examples of the environmental impacts of China's global resources quest.

Ecuador, in a difficult financial position after defaulting on its loans in 2008, began trading oil for Chinese loans in 2009. Heavily dependent on Chinese credit, the Correa government in 2013 concluded an agreement that gives drilling rights to Petro China to extract oil from beneath the highly biodiverse and sensitive Yasuni National Park in the Amazon rainforest. This is a UNESCO Biosphere Reserve that is home to the Huaorani and other indigenous groups, two of them uncontacted. The deal has been roundly criticized, not only because the region is a crown jewel of global biodiversity but also because negotiations were conducted while the government claimed to be trying to raise international donations to put the Reserve off limits to drilling. The deal is worth an initial billion in favorable credit for Ecuador from the China Development Bank, secured by oil to be sold at a fixed price. It is one of the starkest illustrations of China's willingness to step in where other nations

hold back because of civil society pressure and public opinion about justice and indigenous rights. The China Development Bank has been active throughout Latin America and Africa, providing generous credit in exchange for guaranteed access to resources, often in regions where corruption and/or political unrest make them the only game in town (Sanderson and Forsythe 2013).

Mining is one of the world's most conflicted extractive industries and China has been associated with social unrest and environmental degradation in Africa and Latin America. In Zambia, the government announced in 2014 that it would take over the strife-ridden Collum copper mine, which had drawn attention from international human rights groups (Human Rights Watch 2011b). In Ghana, discontent runs high over small-scale illegal Chinese gold miners. In the DRC, however, fortune smiles on China: in a variant of the debt-for-oil model, a resources-for-infrastructure project financed by the China Development Bank has revived plans for a huge controversial iron and cobalt mine, Sicominex (Jansson 2013).

Chinese mining interests, particularly in iron ore and copper, are arguably most active in Peru. A new leftwing wave of resource extractivism is taking place in Latin America under the banner of funding government social programs, and national policies under Peru's President Humala actively favor foreign mining investment. Chinese companies are learning from the negative experience of the decades-old Shougang iron ore mine, notorious for strikes and worker discontent.

The Chinese have often been poor at dealing with local citizens' groups because they assume that a government contract means the project will go forward, as has been their experience at home in ethnic minority regions like Inner Mongolia, Xinjiang, and Tibet, where mining usually proceeds with little local consultation, sometimes even in contravention of indigenous knowledge and spiritual practices. However, the Chinese aluminum corporation Chinalco successfully relocated the town of Morococha at the Toromocho copper mine to make way for an expansion. Activists had expected that moving the community would lead to widespread unrest, but the Chinese hired a specialized consulting firm that gained residents' trust and built a new town even better than the old. In 2014, China purchased Las Bambas, one of Peru's largest copper projects, from Glencore Xstrata, which had been repeatedly fined for environmental violations, in a seven billion dollar cash deal. Local activists are anxious: How the Chinese consortium, led by state-owned Minmetals, handles construction and community labor relations will show whether it has understood that failure to mitigate environmental impacts and gain community support is ultimately poor business practice. Also in Peru, additional impacts fan out from large projects like mines. In Northern Peru, Chinese buyers of maca, a ground-grown tuber thought to be an aphrodisiac, have sent prices skyward and brought crime and unexpected wealth to remote highland areas. The tubers are required under Peruvian law to be processed in the country, but smugglers are transporting them overland to Bolivia, and there is fear of seed-stealing and the eventual production of maca in China, with a loss of seed sovereignty to Peru (Neuman 2014).

As we provide further examples of China's international environmental impact, we must flag its role as a major player in the global rush to secure farmland. China is far from the only actor, as multinational agribusinesses lead the charge, but China's impact on farmland is felt worldwide, with the Ministry of Agriculture encouraging investors to identify friendly, stable, resource-rich countries as sources for wheat, soybeans, corn, and rice. China is particularly sensitive about grain supply; the country has been plagued by famine throughout its history, and during the Cultural Revolution, "Take Grain as the Key Link" was a dominant political campaign, as urban dwellers, young and old, were sent to the far reaches of the country to try to convert wetlands and fill in lakes to try to increase arable land and secure China's grain supply. Even after China's entry into the global capital system after Mao, it has been a point of national pride to try to be self-reliant in grain. The loss of arable land domestically to developers and urbanization has been so worrisome to policy makers that a "red line" of 120 million hectares was established in the 2006 11th Five-year Plan, below which acreage of arable land should not drop. However, given increased attention to heavy-metal soil pollution (particularly the cadmium discovered in rice grown in Hunan) and China's "going out" policy, Chinese investors seem to have understood that they can grow crops overseas. The conversion of forests to grainfields, and the dispossession and displacement of small farmers, is part of a global "land grab" that groups like the International Land Coalition, GRAIN, and farmlandgrab.org are struggling to document and resist.

A final driver of the expansion of China's environmental footprint overseas is migration: the sheer number of Chinese seeking better economic opportunities (and political freedom) abroad is a testament to an adventurous, entrepreneurial spirit that is far from new (see, for example, the Chinese construction of America's Transcontinental Railroad). However, the ease with which ordinary Chinese can now get passports (rare if not impossible during the Mao period and subsequent decade), and their ability to fund their initial voyage, mean that Chinese small businesses can be found throughout the world, often in unlikely places such as Zambia, where Chinese entrepreneurs are harvesting old-growth redwoods (French 2014). Although Chinese may be no better or worse than poor people seeking to make a buck from other parts of the world, they seem unusually visible, inexperienced at respecting local customs, and willing to do whatever it takes to turn a profit. Chinese immigrants are not only highly active in industries like mining and fisheries, but they are even cornering the market on obscure commodities like lavender and maca.

China's newfound economic clout, its enthusiasm for international investment encouraged and enabled by government policy and generous financing, and population outflow are transforming landscapes across the globe. Where others fear to tread, China marches in, often with large numbers of workers and support personnel. Where others hesitate to pursue an opportunity because of high prices or social and environmental concerns, China is ready with an open wallet.

At a moment when the environmental transformation of the planet seems to be occurring at warp speed, China's funds, personnel, and investment philosophy act as catalysts and magnifiers. The rest of the world is often preoccupied with other concerns, and countries on the receiving end of so much Chinese attention have little context to understand their new suitor or time to absorb what it all means. Attention to environmental injustice on the global scale sensitizes us to the fact that poor countries are not in a position to resist when China comes courting, even when the resources they sell are not renewable, or when they give up legal rights to their own land and dispossess their most vulnerable people.

As we have seen, China's environmental challenges shape broad world politics surrounding the environment and beyond. China's drive to secure basic raw materials for its production lines expresses itself through new funding and foreign aid mechanisms in the developing world as well as direct competition with developed countries on the open market. So rapid and aggressive is China's rise that environmental issues have assumed geopolitical importance. The country's policymakers understand securing resources as a basic right to which China is entitled by virtue of historical unfairness and its current huge population and vast landmass. While many other countries have a huge "shadow ecology" that extends beyond their borders, none has seen so dramatic a change in such a short time, and none has the global reach to affect the economies and landscapes in the most remote places on earth. The most obscure commodities have changed fortunes when the Chinese spotlight shines, along with the ownership of global brands and extractive projects.

China's global environmental footprint is a moving target. The unimaginable has become possible; the possible has become likely and the likely is already in the past. Scholars of global environmental politics would do well to take heed. China claims to want to play by global rules, but it also claims to want to rewrite them, replacing the Washington Consensus with the China Consensus, supplementing the Bretton Woods Institutions with a developing world bank, challenging the dominance of the dollar. While Chinese environmentalists are among the world's bravest and most creative, the sheer magnitude of China's global reach limits their influence. It is essential that the world community involve China in the quest for global environmental governance such that the world's largest emerging economy can become a champion of norms of justice and sustainability.

We can see the potential for positive outcomes from China's development strategies abroad if host countries do indeed benefit from increases in aid, trade, and investment. Yet China's economic demands also present grave challenges for environmental justice. Opening new markets and tapping resources may benefit China and its partner nations in the short run; however, they also lead to environmental

degradation, as well as a tendency to flood local markets with cheap consumer goods and crowd out subsistence local traders. The spreading of the Chinese development model, which is not so different from previous centuries of Western development, raises serious concerns: Can the world sustain this? Can the planet survive such demand and conquest? Who are the winners, who are the losers? One of the most important ways that we can answer this question is by refraining from painting China as all good or all bad. We must cultivate a nuanced appreciation for China's historical moment, constraints, pressures, and ambitions, and for the responsibilities of other countries. Only then are equitable solutions likely to emerge....

NOBEL LECTURE

WANGARI MAATHAI*

Your Majesties, Your Royal Highnesses, Honorable Members of the Norwegian Nobel Committee, Excellencies, Ladies and Gentlemen:

I stand before you and the world humbled by this recognition and uplifted by the honor of being the 2004 Nobel Peace Laureate.

As the first African woman to receive this prize, I accept it on behalf of the people of Kenya and Africa, and indeed the world. I am especially mindful of women and the girl child. I hope it will encourage them to raise their voices and take more space for leadership. I know the honor also gives a deep sense of pride to our men, both old and young. As a mother, I appreciate the inspiration this brings to the youth and urge them to use it to pursue their dreams.

Although this prize comes to me, it acknowledges the work of countless individuals and groups across the globe. They work quietly and often without recognition to protect the environment, promote democracy, defend human rights and ensure equality between women and men. By so doing, they plant seeds of peace. I know they, too, are proud today. To all who feel represented by this prize I say use it to advance your mission and meet the high expectations the world will place on us.

This honor is also for my family, friends, partners and supporters throughout the world. All of them helped shape the vision and sustain our work, which was often accomplished under hostile conditions. I am also grateful to the people of Kenya—who remained stubbornly hopeful that democracy could be realized and

*Reprinted from Wangari Maathai's Nobel Lecture, December 10, 2004, at the City Hall in Oslo, Norway. © The Nobel Foundation 2004.

their environment managed sustainably. Because of this support, I am here today to accept this great honor.

I am immensely privileged to join my fellow African Peace laureates, Presidents Nelson Mandela and F.W. de Klerk, Archbishop Desmond Tutu, the late Chief Albert Luthuli, the late Anwar el-Sadat and the UN Secretary General, Kofi Annan.

I know that African people everywhere are encouraged by this news. My fellow Africans, as we embrace this recognition, let us use it to intensify our commitment to our people, to reduce conflicts and poverty and thereby improve their quality of life. Let us embrace democratic governance, protect human rights and protect our environment. I am confident that we shall rise to the occasion. I have always believed that solutions to most of our problems must come from us.

In this year's prize, the Norwegian Nobel Committee has placed the critical issue of environment and its linkage to democracy and peace before the world. For their visionary action, I am profoundly grateful. Recognizing that sustainable development, democracy and peace are indivisible is an idea whose time has come. Our work over the past 30 years has always appreciated and engaged these linkages.

My inspiration partly comes from my childhood experiences and observations of Nature in rural Kenya. It has been influenced and nurtured by the formal education I was privileged to receive in Kenya, the United States and Germany. As I was growing up, I witnessed forests being cleared and replaced by commercial plantations, which destroyed local biodiversity and the capacity of the forests to conserve water.

Excellencies, ladies and gentlemen,

In 1977, when we started the Green Belt Movement, I was partly responding to needs identified by rural women, namely lack of firewood, clean drinking water, balanced diets, shelter and income. [Editors' note: For more information on the Green Belt Movement, see <http://www.greenbeltmovement.org/>.]

Throughout Africa, women are the primary caretakers, holding significant responsibility for tilling the land and feeding their families. As a result, they are often the first to become aware of environmental damage as resources become scarce and incapable of sustaining their families.

The women we worked with recounted that unlike in the past, they were unable to meet their basic needs. This was due to the degradation of their immediate environment as well as the introduction of commercial farming, which replaced the growing of household food crops. But international trade controlled the price of the exports from these small-scale farmers and a reasonable and just income could not be guaranteed. I came to understand that when the environment is destroyed, plundered or mismanaged, we undermine our quality of life and that of future generations.

Tree planting became a natural choice to address some of the initial basic needs identified by women. Also, tree planting is simple, attainable and guarantees quick, successful results within a reasonable amount [of] time. This sustains interest and commitment.

So, together, we have planted over 30 million trees that provide fuel, food, shelter, and income to support their children's education and household needs. The activity also creates employment and improves soils and watersheds. Through their involvement, women gain some degree of power over their lives, especially their social and economic position and relevance in the family. This work continues.

Initially, the work was difficult because historically our people have been persuaded to believe that because they are poor, they lack not only capital, but also knowledge and skills to address their challenges. Instead they are conditioned to believe that solutions to their problems must come from "outside." Further, women did not realize that meeting their needs depended on their environment being healthy and well managed. They were also unaware that a degraded environment leads to a scramble for scarce resources and may culminate in poverty and even conflict. They were also unaware of the injustices of international economic arrangements.

In order to assist communities to understand these linkages, we developed a citizen education program, during which people identify their problems, the causes and possible solutions. They then make connections between their own personal actions and the problems they witness in the environment and in society. They learn that our world is confronted with a litany of woes: corruption, violence against women and children, disruption and breakdown of families, and disintegration of cultures and communities. They also identify the abuse of drugs and chemical substances, especially among young people. There are also devastating diseases that are defying cures or occurring in epidemic proportions. Of particular concern are HIV/AIDS, malaria and diseases associated with malnutrition.

On the environment front, they are exposed to many human activities that are devastating to the environment and societies. These include widespread destruction of ecosystems, especially through deforestation, climatic instability, and contamination in the soils and waters that all contribute to excruciating poverty.

In the process, the participants discover that they must be part of the solutions. They realize their hidden potential and are empowered to overcome inertia and take action. They come to recognize that they are the primary custodians and beneficiaries of the environment that sustains them.

Entire communities also come to understand that while it is necessary to hold their governments accountable, it is equally important that in their own relationships with each other, they exemplify the leadership values they wish to see in their own leaders, namely justice, integrity and trust.

Although initially the Green Belt Movement's tree planting activities did not address issues of democracy and peace, it soon became clear that responsible governance of the environment was impossible without democratic space. Therefore, the tree became a symbol for the democratic struggle in Kenya. Citizens were mobilized to challenge widespread abuses of power, corruption and environmental mismanagement. In Nairobi's Uhuru Park, at Freedom Corner, and in many parts

of the country, trees of peace were planted to demand the release of prisoners of conscience and a peaceful transition to democracy.

Through the Green Belt Movement, thousands of ordinary citizens were mobilized and empowered to take action and effect change. They learned to overcome fear and a sense of helplessness and moved to defend democratic rights.

In time, the tree also became a symbol for peace and conflict resolution, especially during ethnic conflicts in Kenya when the Green Belt Movement used peace trees to reconcile disputing communities. During the ongoing re-writing of the Kenyan constitution, similar trees of peace were planted in many parts of the country to promote a culture of peace. Using trees as a symbol of peace is in keeping with a widespread African tradition. For example, the elders of the Kikuyu carried a staff from the *thigi* tree that, when placed between two disputing sides, caused them to stop fighting and seek reconciliation. Many communities in Africa have these traditions.

Such practices are part of an extensive cultural heritage, which contributes both to the conservation of habitats and to cultures of peace. With the destruction of these cultures and the introduction of new values, local biodiversity is no longer valued or protected and as a result, it is quickly degraded and disappears. For this reason, The Green Belt Movement explores the concept of cultural biodiversity, especially with respect to indigenous seeds and medicinal plants.

As we progressively understood the causes of environmental degradation, we saw the need for good governance. Indeed, the state of any country's environment is a reflection of the kind of governance in place, and without good governance there can be no peace. Many countries, which have poor governance systems, are also likely to have conflicts and poor laws protecting the environment.

In 2002, the courage, resilience, patience and commitment of members of the Green Belt Movement, other civil society organizations, and the Kenyan public culminated in the peaceful transition to a democratic government and laid the foundation for a more stable society.

Excellencies, friends, ladies and gentlemen,

It is 30 years since we started this work. Activities that devastate the environment and societies continue unabated. Today we are faced with a challenge that calls for a shift in our thinking, so that humanity stops threatening its life-support system. We are called to assist the Earth to heal her wounds and in the process heal our own—indeed, to embrace the whole creation in all its diversity, beauty and wonder. This will happen if we see the need to revive our sense of belonging to a larger family of life, with which we have shared our evolutionary process.

In the course of history, there comes a time when humanity is called to shift to a new level of consciousness, to reach a higher moral ground. A time when we have to shed our fear and give hope to each other.

That time is now.

The Norwegian Nobel Committee has challenged the world to broaden the understanding of peace: there can be no peace without equitable development; and

there can be no development without sustainable management of the environment in a democratic and peaceful space. This shift is an idea whose time has come.

I call on leaders, especially from Africa, to expand democratic space and build fair and just societies that allow the creativity and energy of their citizens to flourish.

Those of us who have been privileged to receive education, skills, and experiences and even power must be role models for the next generation of leadership. In this regard, I would also like to appeal for the freedom of my fellow laureate Aung San Suu Kyi so that she can continue her work for peace and democracy for the people of Burma and the world at large.

Culture plays a central role in the political, economic and social life of communities. Indeed, culture may be the missing link in the development of Africa. Culture is dynamic and evolves over time, consciously discarding retrogressive traditions, like female genital mutilation (FGM), and embracing aspects that are good and useful.

Africans, especially, should re-discover positive aspects of their culture. In accepting them, they would give themselves a sense of belonging, identity and self-confidence.

Ladies and Gentlemen,

There is also need to galvanize civil society and grassroots movements to catalyze change. I call upon governments to recognize the role of these social movements in building a critical mass of responsible citizens, who help maintain checks and balances in society. On their part, civil society should embrace not only their rights but also their responsibilities.

Further, industry and global institutions must appreciate that ensuring economic justice, equity and ecological integrity are of greater value than profits at any cost.

The extreme global inequities and prevailing consumption patterns continue at the expense of the environment and peaceful co-existence. The choice is ours.

I would like to call on young people to commit themselves to activities that contribute toward achieving their long-term dreams. They have the energy and creativity to shape a sustainable future. To the young people I say, you are a gift to your communities and indeed the world. You are our hope and our future.

The holistic approach to development, as exemplified by the Green Belt Movement, could be embraced and replicated in more parts of Africa and beyond. It is for this reason that I have established the Wangari Maathai Foundation to ensure the continuation and expansion of these activities. Although a lot has been achieved, much remains to be done.

Excellencies, ladies and gentlemen,

As I conclude I reflect on my childhood experience when I would visit a stream next to our home to fetch water for my mother. I would drink water straight from the stream. Playing among the arrowroot leaves I tried in vain to pick up the strands of frogs' eggs, believing they were beads. But every time I put my little fingers under

them they would break. Later, I saw thousands of tadpoles: black, energetic and wriggling through the clear water against the background of the brown earth. This is the world I inherited from my parents.

Today, over 50 years later, the stream has dried up, women walk long distances for water, which is not always clean, and children will never know what they have lost. The challenge is to restore the home of the tadpoles and give back to our children a world of beauty and wonder.

Thank you very much.

TRANSNATIONAL ENVIRONMENTAL ACTIVISM IN NORTH AMERICA: WIELDING SOFT POWER THROUGH KNOWLEDGE SHARING?¹

RAUL PACHECO-VEGA*

Introduction

While the vast majority of scholarship on the study of transnational advocacy networks (TANs) has focused on the role of value- and belief-sharing as the pre-eminent element that binds these networks of activists across nations together, less has been written concerning the role of knowledge exchange among environmental nongovernmental organizations (ENGOS) in helping effect policy change. This article examines how transnational coalitions of ENGOS in North America have helped shape environmental policy across the Canada–U.S.–Mexico borders. Scholars of transnational civil society have focused on the role of private actors in regulatory processes of global governance for a few years now. Transnational actors' influence on North American environmental policy has been mostly examined from the perspective of how transnational civil society organizations use the North American environmental side agreement to the North American Free Trade Agreement (NAFTA) as a backdoor quasi-regulatory mechanism to pressure Canada, Mexico, and the United States to comply with their own national environmental laws.

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However, the role of knowledge sharing as a tool to wield soft power has taken a back seat to the more publicized and popularized ability of nonstate actors to influence global environmental politics. In this article, I bring back the notion of “soft power” and bridge it with the notion of knowledge sharing, thereby suggesting that nonstate actors use it as a model to build stronger transnational coalitions, effecting pressure on industry and intergovernmental actors, and providing policy input in environmental decision making across borders.

This paper builds on the scholarship on epistemic communities (Adler & Haas, 2008) and departs from the traditional literature on coalition formation around shared values and beliefs (Keck & Sikkink, 1998) by instead focusing on the strategic use of knowledge and information. I bridge these two bodies of scholarship through an analytical framework that explores the role of information dissemination in encouraging coalitional strategies and pursuing (and effecting) policy change. I use this framework to explore two case studies. First, I examine the case of the North American Pollutant Release and Transfer Registry (PRTR) Project, undertaken by the North American Commission for Environmental Cooperation (NACEC or CEC).² As previous research has demonstrated, Mexican ENGOs have used a variety of first-order and second-order mechanisms to bring pressure on the Mexican government to change the mode of reporting in the Mexican version of the PRTR (Registro de Emisiones y Transferencia de Contaminantes [RETC]), from voluntary to mandatory.³ This move has led to increased comparability across North American PRTRs, a policy objective long pursued by the CEC. I argue that the ability (and willingness) to share knowledge concerning the broad spectrum of pollutants being released, and the variety of reporting methods and models and methodologies used to understand the data, enabled ENGOs across North America to build bridges, create stronger coalitions and, in turn, effect policy change around the PRTR.

Second, I analyze the case of the Citizen Submission on Enforcement Matters mechanism (CSEM).⁴ This whistleblowing procedure enables citizens of any of the three countries to bring forth a complaint to the CEC concerning any of the three countries’ failure to comply with their own country’s environmental legislation. CSEM was brought into the design of the North American Agreement for Environmental Cooperation (NAAEC) because of concerns raised by U.S. ENGOs concerning possible pollution havens and industrial plant flight to Mexico. Given that there has been little industrial plant migration to the south of the U.S. border, it does not seem as much of a surprise that U.S. ENGOs have not brought forth a complaint in almost a decade. Yet, despite the lack of popularity of CSEM with American activists, Mexican and Canadian ENGOs (and a select few U.S. ones) have extensively (and successfully) used CSEM to shed light on key environmental issues in each of the three countries (Blair, 2003; Knox, 2002; Pacheco-Vega, 2013d; Weibust, 2008; Yang, 2005). CSEM has been, I argue, influential in strengthening ENGOs’ capabilities to influence policy discussions both in the trilateral environmental discourse and in each one of the three North American countries.

In this article, I choose to compare the cases of the CSEM, and the PRTR project because they are considered innovative models where transnational nonstate actors are deeply involved in North American environmental policy, not only in the agenda-setting stage of the policy cycle, but also in the decision-making and policy-implementation stages. Through this research, I find transnational civil society organizations astutely use a broad array of strategies to countervail the lobbying brute force of their industry counterparts. In doing so, ENGOs are able to wield much more power than one might suspect from an outsider's perspective. These ENGOs share information and knowledge across borders through a variety of channels and, in doing so, are able to create long-lasting and enduring networks that enable them to maintain a strong degree of relevance in North American environmental policy.

For this paper, I use cumulative data from an empirical research program carried out for the past 13 years following the development of TANs across North America. Throughout the research, I conducted extensive, in-depth semi-structured interviews with environmental activists, government officials from the three countries, and staff working for the CEC Secretariat. I also analyzed text from documents generated by each one of the three countries written specifically to address North American environmental politics issues. Moreover, I collected and examined intergovernmental documents that included all resolutions by the CEC council from 1994 through 2014. I also created a unique CSEM dataset.⁵ To complement archival and document research, I participated in at least one CEC-sponsored working group and meeting per year from 2001 through 2013. I also collected additional insights by participating in and observing discussions in an online list-serve launched by a Mexican ENGO aimed at improving the reliability and transparency of the PRTR process.

I use process-tracing as a method that enables me to highlight instances where nonstate actors share information, build knowledge-sharing platforms, and create the right environment to pressure industry. Process-tracing is a qualitative research method that seeks to establish causal relationships between variables through the rigorous study of qualitative data. Collier (2011, p. 823) defines process-tracing as "the systematic examination of diagnostic evidence selected and analyzed in light of research questions and hypotheses posed by the investigator. Process-tracing can contribute decisively both to describing political and social phenomena and to evaluating causal claims." Often used in the study of environmental activists' strategic mobilizations in order to assess the degree of influence these organizations exert (Scheumann & Hensengerth, 2014; Uçarer, 2014), process-tracing allows researchers who use qualitative data to evaluate whether there is a causal relationship between ENGOs' actions and intended policy outcomes. Other recent examples of process-tracing as a research methodology include the study of global–local interactive governance processes (Alger, 2014), an assessment of the influence of think tanks on U.S. foreign policy (Arin, 2014) and an evaluation of industry-shaming strategies by ENGOs (Bloomfield, 2013).

In this paper, I build an analytical typology where I explore the role of nonstate actors as whistleblowers and as policy-shapers. In both of these roles, ENGOs are able to use a variety of strategies all centered on sharing information and building knowledge bases. These strategies include direct advocacy, on-site protests, sharing knowledge and educating the public, lobbying government officials, and so on. Sharing knowledge is not only one of the many strategies that nonstate actors in North America use, but I argue, the strongest and most effective one. The evidence presented throughout the article demonstrates that knowledge transmission enables ENGOs to influence the North American policy-making process through heavy involvement in the agenda-setting process, in the decision-making stage, and more importantly, in the implementation of specific policy reforms.

The paper is structured as follows: after this introduction, I offer a discussion on the literature on nonstate-driven environmental regulation and offer my own take on the public/private, state-led/nonstate-led, soft/hard power/authority bodies of scholarship. I complement this analysis with a brief overview of the use of knowledge-sharing as a model of transnational coalition building, borrowing from the literature on epistemic communities (Cross, 2012; Galbreath & McEvoy, 2013; Gough & Shackley, 2001). I suggest a two-level strategy of inquiry that I argue gives us additional analytical leverage. In the third section, I focus on the literature on transnational nonstate actors, specifically on ENGOS. In this section, I argue that we can gain an additional understanding of nonstate actor behavior through the examination of their strategies. In the fourth section, I offer a brief overview of the state of North American environmental politics. As a region, North America offers an interesting laboratory to study transnational environmental governance and regulation. While much recent attention has been paid to North American climate politics (Selin & Vandever, 2011), I focus on two areas that are not directly related to climate: one substantive (the North American PRTR Project) and one procedural (the CSEM mechanism). In this section, I briefly discuss the evolution of both programs. In the fifth section, I apply the analytical framework to assess just how much power do nonstate actors have, and ask whether we are witnessing a form of transnational nonstate-driven environmental regulation in North America that is built through knowledge sharing. In the last section, I conclude by offering some thoughts on possible pathways and new avenues of inquiry for the study of transnational environmental nonstate-led regulatory regime formation in North America.

Nonstate-Led Environmental Regulation: Somewhere between Markets, Hierarchies, and Public Spheres

The way in which we normally compartmentalize the public policy system clearly delineates three distinct groups of people. First, government officials, bureaucrats,

and politicians (“the government”) are in charge of setting regulatory standards, enforcing these standards, establishing punishment for noncompliance, and creating new public policies that set the way in which industries (also private actors) are supposed to behave. Second, industrial plant corporations and businesses (“the business”) are traditionally the target of governmental environmental regulation. Usually the most regulated of the three groups of people, industry representatives, regularly lobby against standards that they deem negative. Pollution control or reduction standards are often said to stymie industry innovation and decrease productivity. While the jury is still out on this particular debate (see Porter and Van Der Linde against Palmer, Oates and Portney in the 1995 *Journal of Economic Perspectives*) governmental regulatory activity does have an effect on private actors. The third group of people in a public policy system is what scholars of civil society call “the third sector.” In a triadic system of governance where neither hierarchies (government) nor private businesses (industry) own up to the governing challenge, nonstate actors (civil society) giving rise to the notion of “the third sector.”

NGOs and businesses are both important actors in the global governance arena and play a role in the process of crystallizing norms in transnational private regulation (TPR) (Casey & Scott, 2011). Caffagi (2011, p. 20) offers a solid foundation to the analytical framework I propose in this paper with his definition of TPR:

(TPR) constitutes a new body of rules, practices and processes, created primarily by private actors, firms, NGOs, independent experts like technical standard setters and epistemic communities, either exercising autonomous regulatory power or implementing delegated power, conferred by international law or by national legislation. Its recent growth reflects, first, a reallocation of regulatory power from the domestic to the global sphere, and second, a redistribution between public and private regulators.

As indicated by Caffagi, understanding the role of NGOs in the new architecture of transnational regulation is key to explaining how these regulatory regimes that are no longer solely government-led nor bound by domestic politics emerge. Much as the literature on private governance suggests, authority nodes have shifted from being purely governmental to networked forms of governance where nonstate actors play an ever-growing role. In these new structural configurations, as Pattberg (2005) indicates, coregulatory regimes may emerge through public pressure. My argument departs from the coregulatory regime scholarship and centers on sharing knowledge and information as a tool to (a) put pressure on organizations/institutions/industry and (b) build ENGO coalitions across nations. In this paper I argue that knowledge sharing by North American ENGOs effectively helped bring about policy change in Mexico (and in all likelihood, in North America). While it is relatively easy to demonstrate that these NGOs definitely used a variety of strategies to bring about policy change, I argue that the most important (and thus strongest)

contribution of NACEC to ENGO empowerment is the ability to share information and transfer knowledge, thereby building stronger, more robust advocacy coalitions (Keck & Sikkink, 1998).

My analysis centers here on nongovernmental organizations (NGOs) insofar they can contribute to a networked architecture of global environmental governance. ENGOs focus some or all of their political/lobbying activity on the private sector as a roundabout way to counter their frustration with the regulatory capture exercised by industry representatives and lobbyists (Vogel, 2008). Examining ENGO contributions to a networked governance model through a transnational nonstate-led environmental governance lens (Auld, 2014; O'Neill, 2004; O'Neill, Balsiger, & VanDeveer, 2004) allows us to explain the multiplicity of strategies that are used by activists to gain leverage against private interests and governments. Rather than focus on the emergence of nongovernmental transnational regulatory regimes, I focus at this stage on the lobbying strategies (primarily shaming and blaming) that these ENGOs use to leverage their power and build unorthodox forms of regulation. Little work has been done on studies of corporate shaming and blaming, with the exception of recent work by Bloomfield (2013) on the No Dirty Gold and Global Finance campaigns. This article also contributes to our understanding of procedural and substantive nonstate-actor environmental regulatory influence.

I build on the epistemic communities' literature and bridge it into the TANs body of work by arguing that networks of NGOs are built around knowledge-sharing concerning a specific issue. This is a departure from traditional epistemic communities scholarship, where these are considered "professional networks with authoritative and policy-relevant expertise" (Cross, 2012, p. 137). Traditionally, TANs have been considered as those that are built around shared beliefs and values (Keck & Sikkink, 1998). For Keck and Sikkink, activists across borders form coalitions not because they share a specific kind of knowledge, but because they share beliefs on how the world should work, and values. In my view, transnational networks of NGOs are built around sharing specific knowledge, much like epistemic communities do. The difference with the traditional definition of epistemic community is that in transnational NGO coalitions, knowledge can be shared without having an authoritative influence on specific governmental bodies. NGOs can (and often do) forge strong bonds across nations with other activists through sharing specific conceptual frameworks and information. I argue that this model of knowledge sharing is a form of "soft power."

Soft power, as coined by Joseph Nye in the 1980s, is a form of persuasive politics. Instead of demanding compliance with a particular norm or regulation, the use of soft power facilitates policy change (and actors' attitudinal shifts) through the use of suasive instruments rather than command-and-control standards and regulatory instruments. In Nye's words, "soft power is the ability to affect others to obtain the outcomes one wants through attraction rather than coercion or payment" (2008).

Given that noncoercive approaches often yield better results by engaging actors in diplomatic action thus potentially building alliances and partnerships, it comes as no surprise that “soft power” is gaining popularity both as a concept and in the practice of international environmental politics. While there are some authors who are skeptical of the potential of soft power as a component of an explanatory framework (Roselle, Miskimmon, & O’Loughlin, 2014), others have extensively used it to analyze nonstate actor influence in global environmental politics (Gale & Cadman, 2014; Nasiritousi, Hjerpe, & Linnér, 2014). In this paper, I use the “knowledge sharing as soft power” metaphor to gain analytical purchase on the influence that non-state actors have in North American environmental policy making.

Transnational Nonstate Actors’ Influence in North American Environmental Politics

North American environmental politics offers an interesting laboratory to test theories of transnational impact on domestic politics and policy making. Three countries with vastly diverging policy styles were joined forcefully by one free trade agreement (NAFTA) that then led to two side labor and environment agreements (the North American Agreement on Labor Cooperation and the North American Agreement on Environmental Cooperation). NAFTA’s environmental side agreement was not signed without its challenges, and it is often argued that it was born out of pressure put on the U.S., Canadian, and Mexican governments by U.S. ENGOs (Knox, 2010). Ironically, the transparency reform created as a result of the NAAEC (CSEM) has been historically less used by U.S. ENGOs than Mexican and Canadian ENGOs.

In this paper, I follow closely two main processes within the North American environmental policy realm: CSEM and the North American PRTR Project. Both of these processes share interesting characteristics that have made them particularly amenable to being used by TANs. First, they are policy reforms that are intended by design to foster citizen participation in domestic and transnational environmental policy making. Participating in a citizen submission has almost become a standard for large-scale ENGOs. A number of the largest, most popular American, Canadian, and Mexican ENGOs have submitted at least one application to the CSEM process. Nevertheless, not all of them have been submitted by large ENGOs, and some smaller organizations have begun to learn the ropes of the SEM process. Second, these processes privilege information-dissemination approaches over more traditional, regulatory, command-and-control approaches. In the Vedung typology of policy instruments (Vedung, 1998), both the CSEM and PRTR models rely on information transmission, absorption, and utilization. Rather than imposing specific targets for agent behavior, they use a suasive approach to behavioral change (Pacheco-Vega & Nemetz, 2001; Vedung, 1998).

A large portion of this research agenda has focused on the study of how ENGOs form transnational coalitions. In the process of building those coalitions, ENGOs share information, data, and often use a strategic approach to network formation that is reminiscent of strategic alliances. Rather than sharing values and beliefs (as argued by Keck and Sikkink [1998] in their influential work), these transnational environmental advocacy networks focus on targeting industry actors through relentless lobbying in domestic and international arenas. These processes are called first-order and second-order pressure transmission mechanisms (Pacheco-Vega, 2005, 2007a, 2007b, 2013c). A first-order pressure transmission mechanism is a strategy followed by an ENGO whereby the pressure to change behavior is applied directly (through direct lobbying). A second-order pressure transmission mechanism is a strategy whereby ENGOs put pressure indirectly (through advocating and lobbying an intergovernmental secretariat or an international organization). Recent scholarship (Downie, 2014) has focused again on influence and pressure effectiveness, building on earlier work by Betsill and Corell (2008). While there was a heated debate in the early 2000s on just how much pressure nonstate actors were able to exert on national governments, Corell and Betsill's influential articles sparked a new wave of interest on the topic. Guldbrandsen, Pattberg and a few other authors have demonstrated that, in fact, nonstate actors can wield a substantial amount of power. The more recent work of Pattberg (2005) focusing on business/industry interests as private actors notwithstanding, there is also some focus on ENGOs in the same category.

Nonstate Actors as Whistleblowers: The Citizen Submission on Enforcement Matters

CSEM is a process whereby nonstate actors are able to put pressure on nation-state governments through a "whistleblowing" procedure. The goal of the process is to provide a recourse for citizens of all three NAFTA countries to pressure their respective domestic governments to comply with their own national environmental regulatory frameworks (Pacheco-Vega, 2013b).

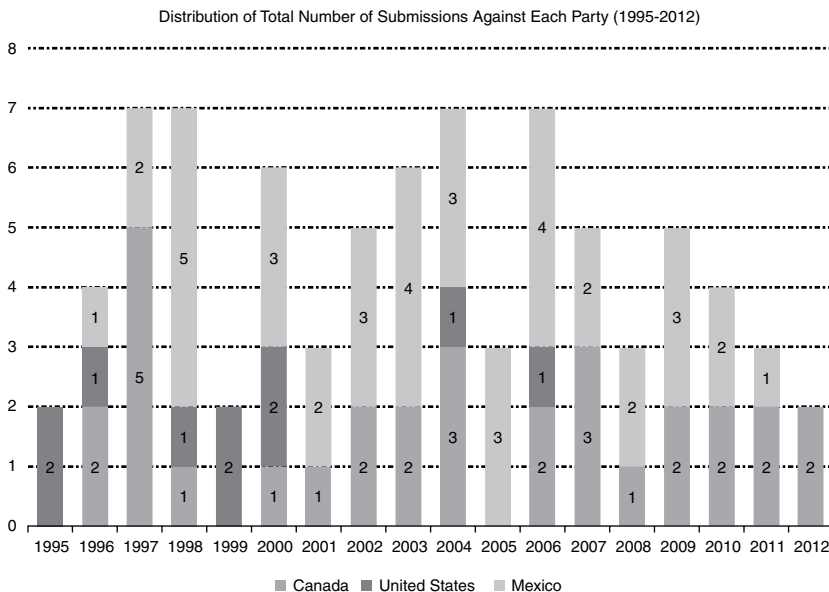
When Mexico was entering NAFTA, discussions on the environmental effects of increased international trade became increasingly heated (Johnson & Beaulieu, 1996). As noted in earlier sections, U.S.-based ENGOs claimed that plants located within U.S. territory would be relocating south of the border in an attempt to escape stringent environmental regulations. The argument of a Mexican pollution haven was too loaded to escape. Another popular argument was also wielded by civil society: the "race to the bottom" hypothesis. ENGOs claimed that the agreement would bring American (and Canadian) environmental standards down to the lowest common denominator (Graubart, 2002; Kirton, 2002; Wold, 2008).

Two mechanisms were specifically designed to allow for citizen participation within the CEC: the Joint Public Advisory Committee (JPAC) and CSEM. The latter

is based on Articles 14 and 15 of NAAEC. Any concerned citizen from any of the three countries can prepare and present a submission to the CEC Secretariat denouncing a country for failing to comply with its own environmental laws. The CEC Secretariat's Office of Submissions on Enforcement Matters reviews the submission and assesses whether the submission actually warrants a response from the concerned country.

An interesting feature of the CSEM mechanism is that citizens from any country can present a submission against any country. A Mexican citizen can denounce lack of compliance with environmental regulation in Mexico, Canada, or the United States, with the same opportunity afforded to American and Canadian citizens. Some submissions against Mexico have actually come from Canadian and/or American ENGOs. This sounds reasonable, as the perception seems to be that Mexican environmental standards are the weakest of all three countries. However, a closer examination of the historical patterns of citizen submissions shows interesting patterns. For example, U.S. ENGOs have only sent in 10 submissions (see Figure 10.1), whereas the vast majority of the targeting has been to Mexico (first, with 40) and Canada (second, with 31 submissions against it).

FIGURE 10.1 Number of citizen submissions on enforcement matters (1995–2012) per country targeted, per year (N=91)



Source: Constructed from own dataset, based on information provided by the SEM office of NACEC

As innovative as the CSEM mechanism is, it has been strongly criticized, primarily by concerned government officials who debate the validity of the ENGOs' claims of regulatory noncompliance. Some Mexican officials have argued that, because the petitioners had not exhausted all other potential avenues (such as domestic lobbying), their submission should have been dismissed. Despite challenges facing the CSEM mechanism, mounting evidence indicates that indeed this mechanism has helped ENGOs raise their profile and advance their agendas (Alvarado, 2003; Gifuni, 2011; Osofsky, 2006; Pacheco-Vega, 2013a; Stanton Kibel, 2001; Yang, 2005).

Issues of legitimacy of ENGO claims are still the subject of heated debates. Particularly, discussions are centered on whether or not ENGOs who present a citizen submission to the CEC Secretariat have exhausted all other possible avenues. It would be very hard for the Secretariat to verify whether ENGOs did indeed explore each and every other option to pressure the target domestic government. It should be noted, though, that while this concern may be legitimate, the mechanism itself is designed to provide additional avenues for citizen participation, regardless of whether they participate within the domestic or international arenas. The choice of a second-order pressure mechanism (lobbying and raising awareness by asking an intergovernmental body to intervene), over a first-order pressure mechanism (direct lobbying with domestic government officials), is still part of a broad array of ENGO strategies that could be considered as valid as any other strategy (Pacheco-Vega, 2005). So when we attempt to evaluate the CSEM mechanism, we should also consider that the mere fact that ENGOs are now comfortable and knowledgeable submitting their concerns for review to the CEC is already a sign of increased citizen participation in environmental policy making in North America. Therefore, the mechanism is fulfilling at the very least one of its most important objectives.

Nonstate Actors as Policy Shapers: The North American Pollutant Release and Transfer Registry Project

Information-based environmental policy instruments gained a great deal of popularity in the past couple of decades (Pacheco-Vega, 2007a, 2007b). Information-dissemination programs are considered the least coercive of all policy instruments. These instruments use mechanisms of information transmission that raise awareness both at the firm and interest group level (plus the general public). Suasive or information-dissemination instruments are predicated on the assumption that by receiving information on potentially toxic contaminants being released in their neighborhoods, individuals will seek to force firms to reduce their emissions and be compliant with environmental regulation (Harrison, Pacheco-Vega, & Winfield, 2003; Vedung, 1998).

While originally the pioneer implementation of information-based policy instruments was the United States' Toxics Release Inventory (TRI), Canada followed suit shortly thereafter with its National Pollutant Release Inventory (NPRI). In 1999, the Organisation for Economic Cooperation and Development sponsored a pilot project to implement a pollutant release and transfer registry in Mexico, the RETC. Contrary to its predecessors, Mexico's pollutant release inventory was not mandatory in nature. This design flaw hampered any potential early success of the RETC. Information-based policy instruments' effectiveness depends on the provision of information by the polluter herself. PRTRs rely on civil society to undertake corporate-shaming campaigns (Bloomfield, 2013; Pacheco-Vega, 2007a, 2007b). I argue that the emergence of a stronger civil society coupled with a "retreat from regulation" and an orientation toward less coercive policy instruments have been two of the key factors that led to the surge of these types of program.

The RETC is the Mexican counterpart to the U.S. TRI and the Canadian NPRI. PRTRs are predicated on the basis of the so-called "right-to-know" approach, which arises in response to Principle #10 of the United Nation's Commission on Environment and Development Agenda 21, indicating that states should facilitate and encourage public participation through disseminating information. This raises public awareness and mobilizes interest groups to influence industrial firms to reduce pollution (Harrison et al., 2003). These registries include detailed data and information on the types, locations, and amounts of substances of concern released on-site and transferred off-site by industrial facilities. Ideally, governments compile these data from each industry and make it available to the public through the Internet and print. This is an effective strategy when individual citizens or interest groups make use of the information and influence firms to reduce the impact on the environment.

While the United States and Canada have accumulated much more experience with PRTRs, Mexico's program just started in 1996. Increasing comparability between the three North American PRTRs proved a difficult task because the Canadian and American systems are based on mandatory reporting, whereas the Mexican system was (up until 2001) entirely voluntary. There is also disagreement on the types of substances or even the level of data aggregation used to report on pollution. Furthermore, whereas the United States and Canada have been working toward making NPRI and TRI more comparable for a number of years, Mexico is still at the developmental stages. However, data collection in the past 5 years has been more robust and the PRTRs in North America have become slowly but surely more comparable.⁶

During the negotiation process of the North American Pollutant Release and Transfer Registry project (1999–2001), a number of Mexican ENGOs were successful in building a TAN that was able to successfully influence how the process in Mexico was carried out.⁷ While voluntary at first, 2 years of relentless lobbying using first-order

and second-order pressure transmission mechanisms gave rise to the change in policy design (Pacheco-Vega, 2005). This process of negotiation confronted NGOs with a number of lobbyists from the chemical industry, especially the Chemical Industry Association of Mexico (Asociación Nacional de la Industria Química [ANIQ]).

Other Avenues of Nonstate Actor Involvement in North American Environmental Politics

In addition to CSEM and the North American PRTR projects, two additional and very relevant avenues for citizen participation in North American environmental policy are the JPAC and the participation of civil society representatives in public meetings and advisory committees to NACEC's programs. JPAC is a trinational, multi-stakeholder advisory committee that provides input and advice to the CEC Council on matters related to the CEC programs and projects. Each government nominates an individual that represents industry, government, academia, and civil society. JPAC is composed of 15 individuals (five nationals of each country). While the composition of JPAC may or may not reflect a wide variety of interests and viewpoints, the idea in and of itself is a good one. However, JPAC does not provide steering direction nor does it have any binding powers. It provides advice, and it is up to the Council to determine whether or not it adopts any recommendations. In this article, I have chosen not to discuss JPAC at length, because it is not a mechanism that provides for ample citizen participation in and of itself. Only one civil society representative per country sits on JPAC and, generally speaking, he/she comes from highly recognized ENGOs and/or is highly recognized himself/herself. For example, long-time Mexican toxic reduction activist Laura Silvan de Durazo was at some point a member of JPAC. Regina Barba-Pirez, the former head of the coalition of environmental groups Union de Grupos Ambientalistas, previously an activist who then spent a few years with the Mexican Secretariat of Environment and Natural Resources, was two-time Chair of JPAC during her tenure. Gustavo Alanis, a renowned environmental lawyer from the Mexican Center for Environmental Law (CEMDA), has been chair of JPAC on several occasions.

The above said, private interests (especially business associations) also sit at the table within the Joint Public Advisory Committee. In fact, one could be wary (and the concern would be warranted) as the number of industry representatives in JPAC is almost always higher than the number of environmental activists. While academics are supposed to have a seat at the JPAC table, digging deep we can find links with industrial associations among some of these representatives (in particular, in the Mexican case).

Participation in NACEC's consultative groups and public meetings is a far better and more open mechanism for citizen participation. Academics and civil society

organizations are frequently funded to travel to participate in NACEC's meetings. This financial support is provided on a demonstrated-need basis. At several Consultative Group meetings for the North American PRTR Project, ENGO representatives publicly indicated to me that their participation would have not been possible had it not been for the CEC's financial support. In fact, to further complicate our analysis, one could argue that the CEC may well have provided funding as a way to influence domestic environmental politics in Mexico. This claim is harder to prove, however.

A Two-Stage Analysis of Transnational Nonstate-Led Environmental Regulation in North America

My approach to the study of transnational private environmental governance follows a hybrid model. First, I categorize actors in the governance system as states and nonstate actors, with an obvious distinction within the nonstate actors: industry/business interests and civil society interests. Engaging with this categorization, I showcase the struggles between state and nonstate interests. My analysis is specific to lobbying activities that engage with the discussions around pollutant release and transfer registries as a model of participation in environmental policy making. In a second stage of the analysis, I focus primarily on the power held and exerted by civil society nonstate actors, and I provide a description of their lobbying strategies against both industry representatives and bureaucrats/politicians.

What becomes evident from my analysis is that a multilevel approach to studying global environmental regulation proves most effective in helping us understand the complex networks of power and the varying strategies that nonstate and state actors wield. Instead of a linear, confrontational, dichotomic division of power, a nuanced approach that takes into account the soft power that nonstate actors have increasingly been harnessing to put pressure on states and subnational interests gives us analytical leverage over other approaches.

As Table 10.1 shows, the target actor in the case of PRTRs is the individual firm. I argue that we can hint at the possibility of transnational environmental private regulation because private actors (individual firms) are being pressured by ENGOs. As a result, while not setting an actual code of conduct, ENGOs are able to wield power by using transnational institutions as leverage and put pressure, ultimately, on individual industries or sectors. While the CSEM process is aimed at national governments, I argue that ENGOs have used the process as a method to put pressure on specific companies. For example, the Cozumel Reef case (Submission 96-001) was framed as a case where building a cruise ship pier on the Cozumel Island would actually violate Mexican environmental laws as it would not have been properly reviewed by environmental impact assessment authorities. This

case was brought forth by three ENGOs. The submission was led by the CEMDA, and two other cosigning organizations (Stanton Kibel, 2001; Wold, 2004). This framing strategy enabled NGOs to put pressure on an individual business interest but was portrayed and channeled through targeting of the Mexican government (Pacheco-Vega et al., 2010).

The two case studies offer interesting insights into the power that nonstate actors have. While in one of them (CSEM), we see that the strongest degree of opposition comes from national governments, nonstate actors are able to wield leverage against domestic governments via international institutions. In the other case (PRTR), the strongest opposition to regulatory approaches comes from industry representatives. As indicated in paragraphs above, staunch opposition by the chemical industry association to allow the Mexican government to shift the RETC process from voluntary reporting to mandatory reporting was countervailed by the transnational coalition of environmental NGOs through their relentless lobbying at consultative group meetings for the North American PRTR project.⁸

Both cases (the SEM process and the NAPRTR project) offer interesting findings on how North American nonstate actors are able to wield power. None of the strategies used by environmental nongovernment organizations are of direct confrontation and/or lobbying (first-order pressure transmission mechanisms). In both cases, pressure transmission mechanisms of second order are used. Nevertheless, private actors (like industry associations) are able and willing to lobby the Canadian, U.S., and Mexican governments.

While these cases are not traditional “private environmental regulation” as seen by some of the authors cited, I argue that nonstate actors like environmental ENGOs

TABLE 10.1 A comparative view of the PRTR and CSEM mechanisms

	PRTR	CSEM
Target actor:	Individual firms	National governments ⁹
Expected behavior:	Pollution reduction at the plant level	Enforcement and compliance with national environmental laws
Character of claim:	Can be objectively measured	Cannot be objectively measured
Measurement of success:	Quantitative	Qualitative
Performance indicators:	Reduction in pollutant emissions and releases	Actions taken by national governments toward compliance
Influential actor:	ENGOs	ENGOs
Influence mechanism:	Shaming and blaming	Shaming and blaming

Source: Table created by author

are in fact able to effect influence in strategies chosen by nation-states to carry on design and implementation of environmental regulations. To the degree that this influence is still the result of information-dissemination and soft power that does not affect directly day-to-day operations either in national secretariats or international organizations, nonstate actors have varying degrees of influence. The two case studies presented here offer empirical evidence of a shift toward nonstate-influenced environmental governance.

This research also contributes to the epistemic communities literature by shifting the thinking concerning membership in an epistemic community from the individual level (as in Haas's work) to the group/organizational level.¹⁰ Instead of thinking of epistemic communities as groups of scientists who have shared expertise, I argue that we should consider thinking of environmental NGO coalitions sharing knowledge as another form of epistemic community. This notion of epistemic community is one where influence occurs because ENGOs share knowledge and expertise among each other rather than solely with their own members. This shift in thinking also opens new and rich avenues for future research.

Conclusions

As we approach the 20th anniversary of the NAFTA and its side environmental (the NAAEC) and labor agreements (the North American Agreement on Labor Cooperation), much is being celebrated. NAFTA and its side agreements have been heavily touted as having provided one of the best platforms for knowledge sharing, thereby enhancing trilateral relations. The two case studies analyzed provide an interesting overview of the challenges facing environmental governance in North America. In the North American PRTR Project case, ENGOs proved almost equally strong to industry representatives who worked hard and lobbied relentlessly to avoid having a mandatory PRTR reporting imposed on them. In the case of the CSEM, degrees of strength are quite wide depending on the subcase under analysis. In some cases, nonstate actor intervention proves extremely successful, whereas in others there is very little evidence of success.

We should recognize that there is value in understanding under what conditions do nonstate actors matter in transnational environmental governance. We should also recognize that, while they do not entail traditional regulation, the role of nonstate actors cannot be overlooked. Nonstate actors, however we want to categorize them, do have an impact on transnational environmental governance in North America. As the case studies discussed have shown, while the role of the nation-state remains central (regardless of the theoretical orientation of researchers), nonstate actors have increasingly taken a more preeminent role in domestic and international environmental policy making. Nonstate actors are able to bridge

the local– global chasm through information dissemination, policy diffusion, and transfer and strengthening processes.

This article also highlighted the interplay of domestic and international environmental politics. While influence was felt through horizontal policy mechanisms (through direct contact with other countries' organizations), vertical policy coordination was also relevant (influenced by international environmental institutions). It is important to note that, while this case did not aim to provide a comparison between horizontal and vertical environmental policies, it clearly shows that the policy-making process is always the result (to a certain extent) of the interplay between these two schemes of policy coordination. This interplay should be examined in more depth and offers fertile ground for future study.

In this article, I have shown that there is a growing number of case studies where we can find influence on the part of nonstate actors. However, along the same lines, there is a dearth of rigorous empirical studies on the impact of nonstate actors in North American environmental policy. Moreover, it is harder to build a framework to assess to what degree these nonstate actors actually have an impact. This project attempts to contribute to this growing literature by differentiating the ways in which nonstate actors wielded soft power in each case study (CSEM and NAPRTR).

While there has not been a definite answer on whether we are witnessing the formation of a North American environmental regime, the case studies discussed in this paper suggest that there are a number of possible pathways and new avenues of inquiry for the study of transnational environmental private regulation in North America. Even though standard codes of conduct like forest certification and ecolabeling were very popular in North America less than a decade ago, the fast-paced evolution of the CEC's programs and changes in recent years to its lines of work (as dictated by the Council) have meant a shift in focus away from regulatory processes to, for example, climate action, sustainable supply chain management, and green buildings. Nevertheless, I argue that with increased NGO and industry trade associations' involvement in North American environmental policy making, we may be witnessing the beginnings of a transnational private environmental regulatory regime. More research on this topic is much warranted.

NOTES

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2. I use NACEC or CEC interchangeably throughout the text to refer to the Commission for Environmental Cooperation.

3. I use the definitions of first-order pressure transmission mechanisms and second-order pressure transmission mechanisms first presented in Pacheco-Vega (2005). A first-order pressure mechanism would refer to direct action to shape actors’ behavior such as direct lobbying or on-site protest. A second-order pressure mechanism would mean a lateral movement where Actor A pushes Actor B to exert influence on Actor C (e.g., using Actor B as an intermediary). I expand on the first-order and second-order mechanisms in later sections of this article.

4. Originally, the mechanism was named as “Citizen Submission on Enforcement Matters.” Along the way, in the past few years, the “C” for citizen has been dropped. I use here CSEM and SEM interchangeably as the technical unit in the CEC’s Secretariat uses the SEM acronym. However, I wanted to emphasize that this mechanism was intended to empower citizens. Thus, it seemed important to me to keep the acronym as CSEM. I do this also for consistency with earlier published research on this topic.

5. The CEC has recently produced an interesting innovation in how citizen submissions on enforcement matters are handled by creating an online database that is easily accessible and can create reports. This is a recent innovation (2014). The CEC has also innovated by creating a submission tracker that can tell the user what is the current status of any particular submission.

6. Interview with PRTR project officers, June 2013.

7. A more in-depth description of the process would extend beyond the space limits of this article. I thus refer the reader to Pacheco-Vega, Weibust, and Fox (2010).

8. Much of the NGO diplomacy strategizing in recent years has arisen from “watercooler talk” where we see environmental activists talk to government representatives in the corridors, over dinner, or while on a break from international/regional negotiations. Betsill and Corell (2008) have documented this process quite extensively.

9. However, in some cases, lobbying activities through the CSEM have been targeted at specific industries. This is an interesting twist to the traditional stories on TANs, whereby the shaming and blaming strategies are used to build a case against environmental performance of specific firms.

10. I am extremely grateful to an anonymous reviewer who pointed this particular insight to me and encouraged me to expand on the contribution that this analysis makes to the broader literature on epistemic communities.

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PART THREE

INSTITUTIONS OF GLOBAL ENVIRONMENTAL GOVERNANCE



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EFFECTIVE RESPONSES TO GLOBAL ENVIRONMENTAL PROBLEMS REQUIRE INTERNATIONAL cooperation. Many environmental problems flow across borders, including acid rain and other air-quality issues, international shipments of toxic waste, migratory species, and water issues in shared river basins. Other challenges, such as climate change, deep-ocean pollution, and destruction of the Earth's stratospheric ozone layer, negate the concept of borders entirely; they occur in planetary spaces that have not been enclosed within the sovereign state system. Still other forms of environmental change, such as soil erosion, land degradation, and the depletion of fisheries, may seem to be "local," but may add up to yield global-scale socioeconomic effects despite having a physically localized character. To respond effectively to these problems, governments and other actors in international society must cooperate.

But the barriers to such cooperation are substantial. They include uncertainty, mistrust, conflicting interests, different views of causality, complex linkages to other issues, and the myriad problems of coordinating the behavior of a large number of actors.¹ For some, the challenge of global environmental governance is to fill the "anarchic" space of an ungoverned world system with laws and rules that can change actors' environmentally destructive behavior. Others have framed the challenge quite differently: to reform or transform deeply embedded political-economic practices that already govern the world system, surrounding trade, international investment, development assistance, and multinational corporate activity. With several decades of experience to look back upon, what may we conclude about how successful the international community has been in creating new governance mechanisms that promote sustainability and in reforming existing ones that may undermine it?

Answering these questions requires an understanding of the concept of institutions. Oran Young has defined institutions as "social practices consisting of easily recognized roles coupled with clusters of rules or conventions governing relations among the occupants of these roles."² By this definition, with its emphasis on roles and rules, institutions are not synonymous with organizations, which are "material entities possessing physical locations (or seats), offices, personnel, equipment, and budgets."³ Many institutions have a formal organizational base; others, such as language systems or a given culture's concept of the family unit, endure informally, and are reproduced over time by the beliefs and practices of individuals and groups.

In this section, we examine some of the institutionalized approaches to global environmental governance. In practice, efforts to promote global environmental protection through law have focused primarily on crafting multilateral environmental

treaties. Despite the sometimes formidable barriers to cooperation, international agreements of varying scope and effectiveness have been created on a number of important issues, including the international trade in endangered species, international shipments of toxic waste, ocean dumping, the Antarctic environment, whaling, nuclear safety, and the protection of regional seas. One of the most impressive examples of international cooperation is provided by the international agreement on protecting the planet's ozone layer. The successful negotiation of the Montreal Protocol on Substances That Deplete the Ozone Layer in 1987, and its further strengthening in subsequent agreements, signaled what many hoped would be a new era of increased global environmental cooperation. Certainly that enthusiasm carried over into the 1992 Rio Earth Summit, where governments attempted to hammer out agreements that would slow global climate change, protect biological diversity, and reduce land conversion by slowing deforestation and desertification.

But as the international community grappled with more complex and contentious problems than saving the ozone layer—problems involving more actors, greater scientific uncertainty, higher stakes, more deeply entrenched interests, fewer technological alternatives, and higher costs of adjustment—the momentum for forming ambitious new international environmental regimes began to stall not long after the UN Conference on Environment and Development (UNCED). Important new agreements continue to be negotiated, signed, and ratified by enough nations that they enter into force, including the global accord on mercury pollution (signed in 2013 and entering into force in 2016) and of course the Paris Agreement. But the overall rate of treaty formation has fallen off, for reasons that may include global economic difficulties, nationalist opposition, or “treaty fatigue” among overtaxed national and international bureaucracies.⁴ Thus, one of the current debates is how to promote better integration and coordination among existing agreements.⁵

But there is more to the institutionalization of global environmental governance than just writing and signing treaties, important though that may be. We begin this section with a review essay by Norichika Kanie and several other leading environmental scholars, originally published in the influential journal *Environment*. Their goal was to identify best (and worst) practices across a large range of efforts at international environmental collaboration. Rather than simply examine treaty content, they break the process into several components, which they label agenda setting, negotiations, compliance, implementation, and “resilience” (which they define as “maintaining a dynamic balance among social changes, governance, and environmental conditions”). Their analysis provides a good overview of the range of types of actors engaged in these processes, as well as the various ways they band together through networks, partnerships, and other formations.

Although treaties are central instruments of global environmental governance, they are hardly the only ones. Transnational economic activity, in the form of international trade, foreign investment, development assistance, and the integration

of capital markets, has broadened and deepened over the past several decades. With these changes have come controversies over the environmental impacts of such activities, as well as demands from environmental activists and others that those impacts be regulated, mitigated, minimized, or prohibited outright.⁶ While treaties may perform that role, so too do other instrumentalities, including the environmental safeguards policies adopted by the World Bank and other donors; the environmental provisions written into international trade agreements; the emergence of “green” investment options; and the voluntary schemes that certify best practices around environmentally contentious industries, including forest products, fishing, diamond mining, and many other commodities. In some cases, these mechanisms produce formally codified rules with the status of international law; in others, they reside in voluntary mechanisms, the adopted practices of specific organizations, ongoing forums of stakeholder dialogue, or other softer forms of rule-making.

To illustrate some of the complexities around environmental regulation of transnational economic activity, we focus on the specific example of international trade. During the second half of the 20th century, trade came to account for an increasingly large share of global economic activity, and the system of rules governing trade came to be formalized through international agreements—initially through a series of negotiating rounds under the auspices of the 1948 General Agreement on Tariffs and Trade and, since 1995, the World Trade Organization (WTO). While not usually considered “environmental” treaties, trade agreements should be seen as a type of implicit environmental governance, in that their provisions will have profound environmental consequences.

The effort to invigorate or expand international trade has always been controversial, and as global environmental consciousness increased the environmental dimensions of trade have become part of that controversy.⁷ The environmental provisions of the WTO have been an ongoing source of contention, as was the process of negotiating the North American Free Trade Agreement (NAFTA) in the early 1990s.⁸ In Chapter 12, Jennifer Huizen examines the recent efforts to rework NAFTA, which are ongoing as of this writing. Her discussion of the specific items that constitute a “wish list” of environmental provisions provides a useful illustration of the many ways that modern trade agreements may have environmental impacts, including whether and how trading partners are held accountable under domestic environmental laws and regulations; whether and how public goods such as water may be commodified; and downward pressures on national regulatory standards. The chapter also underscores that trade agreements, rather than simply “liberalizing” trade, typically contain a series of brokered deals around vested sectoral interests, as in NAFTA’s arcane “energy proportionality” rule (which Huizen argues may stymie climate-mitigation strategies). Liberalization, of course, may also have significant and complex environmental consequences.

On the one hand, it may allow for greater efficiencies in resource use, if imports are produced more efficiently than domestic goods. But trade may also undermine relatively sustainable practices, livelihoods, and communities, as in NAFTA's devastating consequences for small farming in the Mexican countryside.

We conclude this section with three chapters on one of the most interesting and controversial processes of international environmental institution building, that surrounding the issue of climate change. The international regime for climate governance was launched in 1992 with the United Nations Framework Convention on Climate Change (UNFCCC). The initial agreement provided a broad framework for climate governance, including a provision for annual Conferences of the Parties (COPs) that would spell out more specific rules on states' climate rights and responsibilities and that continue to the present day. In 1997, governments adopted the Kyoto Protocol to the UNFCCC, a much more specific framework that included quantitative targets and timetables for industrialized countries to reduce their greenhouse-gas emissions. A decade later, as it became time to discuss what would follow the Kyoto Protocol, it also became clear that most signatories were not going to meet their targets, and that many powerful states had little appetite for the mandatory-targets approach. Governments then negotiated the Paris Agreement (2015), which took a substantially different strategy. Paris allows countries to define and commit to their own national contributions to climate-change mitigation at a level they consider reasonable and achievable.

Thus, Paris reflects a dramatic shift in the climate regime's regulatory philosophy, stressing the enabling of action rather than its compulsion. As such, the agreement has been controversial. Proponents argue that it creates incentives for innovation, much of which will occur among a wider cast of characters than just national governments—for example, within transnational networks populated by civil society, cities and other sub-national jurisdictions, the private sector, and others who join "coalitions of the willing." A more skeptical view is that Paris merely codifies the limited ambitions of the current international moment, and that it lacks the teeth to be truly effective.

Paris is also significant as an example of an accord that recognizes the complexity of global environmental governance. There is far more to the politics of climate change than simply allocating responsibility for reduced emissions. Much of the Paris Agreement is dedicated to establishing or modifying the processes by which governments debate and manage a much wider set of climate-related issues: how to address losses and damage resulting from the effects of climate change; how to mobilize international financial mechanisms for climate mitigation and climate adaptation; how to take stock periodically of global progress; how best to protect existing 'sinks' that aid the effort by absorbing some of the world's emitted carbon; and more.

We conclude this section with three essays debating the efficacy of Paris. Meenakshi Raman, a senior legal advisor for the Third World Network, provides a detailed

account of the politics behind each of Paris's major provisions (Chapter 13), including nationally determined contributions, mitigation, adaptation, loss and damage, finance, technology transfer, transparency of information, and global stock-taking. Interestingly, her analysis shows that governments cared very much about the "fine print" of the agreement—including a bitter fight over whether the word "shall" or "should" was to be used to describe the particular responsibilities of the developed-country parties to the accord. Raman also illustrates that those concerns reproduced two important historical divides in global politics. First, and most obviously, is the split between the richer countries of the global North and those of the global South, which we have seen as a recurring theme in global environmental politics since the Stockholm era. Second is the gap on many issues between the United States and the European Union.

Another interesting insight from Raman's essay is the power (at least in her view) that comes from solidarity and uniformity within the South coalition. In the end, Raman views the overall approach of the agreement, to pool voluntary national commitments, as "the only possibility, given the state of many governments (including the United States) generally not being ready or willing or able to undertake legally binding targets."

Whether or not it was the best agreement possible under the political circumstances, what should we make of the result of Paris? Richard Kinley, Deputy Executive Secretary of the UNFCCC Secretariat, offers a mostly positive interpretation of what the Paris Agreement has achieved, characterizing the Paris COP that spawned the accord as "the most successful climate change conference ever," one that featured "a remarkable spirit of cooperation and a determination among governments" and produced "a ground-breaking outcome" (Chapter 14). Of course, one might expect a senior official from within the climate regime to put a positive face on developments. But Kinley's essay goes well beyond laudatory rhetoric. He offers a specific reading of the political context that yielded the result at Paris. Where Raman saw the world held back from more aggressive action by a recalcitrant United States, Kinley describes instead a surprisingly successful negotiating outcome driven by a specific mix of factors: changes in the economics of renewable energy, increasing recognition by governments of the need for action, and capable leadership in "getting to yes" by the meeting's host government, France.

Kinley also identifies several specific achievements of Paris that, for him, make it a game changer. These include placing specific national actions at the heart of the climate governance regime; setting ambitious, comprehensible goals; committing to periodic assessments of progress; stock-taking; softening previously stark (and, one infers, archaic) distinctions between the responsibilities of developed and developing countries; and strengthening the focus on adaptation, financing, and market mechanisms. From this list one can infer a theory of how the agreement is supposed to drive change, rooted in enabling and empowering action rather than seeking to compel it.

Clive Spash (Chapter 15), an ecological economist and researcher, offers a much more critical perspective on what the accord, which he terms “The Paris Agreement to Ignore Reality,” is likely to enable and whom it will empower. For Spash, the agreement’s significance lies primarily in the gap between its features and aspirations on the one hand, and the reality of the world’s climate-change trajectory on the other. Paris “confirms the conversion of the international position from prevention to risk management” by failing to offer a coherent plan to meet its own aspirations of keeping global average warming to 2°C or less. Specific shortcomings of the accord include the failure to acknowledge the climate implications of growth-oriented economic policies; magical thinking about the transformational promise of a “green economy”; avoidance of any discussion of current consumption and production patterns; no specific provisions on fossil fuel use; and no means of enforcement. Again, from this list one may infer a theory of how international environment governance works, and the conditions and tools it needs if it is to bend actors’ behavior meaningfully toward sustainability.

Thinking Critically

1. Given how Kanie and colleagues (Chapter 11) describe the tools of international environmental cooperation, do you think the toolbox is half-empty or half-full? At which stage of the process they describe—agenda setting, negotiations, compliance implementation, and resilience—does the overall system seem strongest? Weakest?
2. Using Raman’s sketch of the major provisions of the Paris Agreement (Chapter 13), how well do you think it reflects the best practices identified in the chapter by Kanie and colleagues (Chapter 11)?
3. Visit the web sites of some environmental organizations in Canada, Mexico, and the United States that have taken public positions on the talks for a revised North American trade agreement. How do their positions compare with the environmental “wish list” described by Huizen (Chapter 12)? Do you find a similar set of environmental views across the region, or different national concerns? If an agreement has been signed and ratified at the time you are reading this, review it and compare it to Huizen’s wish list. Which if any of her goals were realized?
4. Contrast the essays by Spash and Kinley. What would be the strongest points that each could offer in a head-to-head debate? What do you think Spash would say about each of the eight items in Kinley’s list of significant achievements of the Paris Agreement? How might Kinley respond to Spash’s skepticism about the accord’s impact, and to the motives he sees behind its content? Compared to these two authors, where do your own views lie?

5. Revisit the list of design principles for “long-enduring” common-pool resource systems in Table 6.2 of Chapter 6 by Basurto and Ostrom. Based on the descriptions of the Paris Agreement in this section, which of these design principles does it follow? Which does it fail to follow? Has the international community created an effective set of rules for climate governance, given what we know about the management of common-pool resources?
6. In your opinion, how will history judge the world’s progress in institutionalizing international environmental cooperation and governance in the decades since the Stockholm conference (1972)? Imagine that you are a journalist writing about the legacy of this period from the vantage point of someone living in the year 2042. What do you imagine the first paragraph of your story would say?

NOTES

1. A classic work on barriers to cooperation is Mancur Olson, *The Logic of Collective Action: Public Goods and the Theory of Groups* (Cambridge, MA: Harvard University Press, 1965). For a more optimistic perspective on similar questions, see Elinor Ostrom, *Governing the Commons: The Evolution of Institutions for Collective Action* (London: Cambridge University Press, 1990), as well as the chapter by Ostrom and her colleague Xavier Basurto in Part One (Chapter 6).

2. See Oran Young, *International Cooperation: Building Regimes for Natural Resources and the Environment* (Ithaca, NY: Cornell University Press, 1989), p. 32. See also Ken Conca, *Governing Water: Contentious Transnational Politics and Global Institution Building* (Cambridge, MA: MIT Press, 2006).

3. Young, *op. cit.*

4. Ken Conca, *An Unfinished Foundation: The United Nations and Global Environmental Governance* (New York: Oxford University Press, 2015).

5. On challenges of coordination among treaty secretariats, see Sikina Jinnah, *Post-treaty Politics: Secretariat Influence in Global Environmental Governance* (Cambridge, MA: MIT Press, 2014); Sebastian Oberthür and Olav Schram Stokke, eds., *Managing Institutional Complexity: Regime Interplay and Global Environmental Change* (Cambridge, MA: MIT Press, 2011).

6. Peter Newell, *Globalization and the Environment: Capitalism, Ecology, and Power* (New York: Wiley, 2013).

7. For a range of views on trade and the environment, see Globalization 101, “Are International Trade and Protection of the Environment Enemies?” available at <http://www.globalization101.org/are-international-trade-and-protection-of-the-environment-enemies/>; Sikina Jinnah and Abby Lindsay, “Diffusion through Issue Linkage: Environmental Norms

in US Trade Agreements,” *Global Environmental Politics* vol. 16 no. 3 (2016): 41–61; William Krist, “Uneasy Neighbors: Trade and the Environment,” in *Globalization and America’s Trade Agreements* (Washington, DC: Woodrow Wilson Center Press, 2013), available at <https://www.wilsoncenter.org/chapter-7-uneasy-neighbors-trade-and-the-environment>; Joel P. Trachtman, “WTO Trade and Environment Jurisprudence: Avoiding Environmental Catastrophe,” *Harvard International Law Journal* vol. 58 no. 2 (2018): 273–309.

8. On early environmental controversies around the WTO and NAFTA see John Audley, *Green Politics and Global Trade* (Washington, DC: Georgetown, 1997); Ken Conca, “The WTO and the Undermining of Global Environmental Governance,” *Review of International Political Economy* vol. 7 no. 3 (Autumn 2000): 484–494.

GREEN PLURALISM: LESSONS FOR IMPROVED ENVIRONMENTAL GOVERNANCE IN THE 21ST CENTURY

NORICHIKA KANIE, PETER M. HAAS, STEINAR ANDRESEN,
GRAEME AULD, BENJAMIN CASHORE, PAMELA S. CHASEK,
JOSE A. PUPPIM DE OLIVEIRA, STEFAN RENCKENS, OLAV
SCHRAM STOKKE, CASEY STEVENS, STACY D. VANDERVEER, AND
MASAHIKO IGUCHI*

In the last generation, the frequency and magnitude of environmental degradation has been unprecedented. Partly as a result, environmental problems are increasingly global in nature, even as many the effects of “traditional” environmental issues such as air and water pollution, and waste management, persist and worsen. The situation is so dire that many problems have already achieved, or are heading towards irreversible changes with negative consequences for a healthy planet.¹

The evolving and expanding nature of our environmental problems calls for a new way of handling these challenges.² But our global governing institutions, which address these environmental challenges remain based on nation-state-oriented designs and processes of international relations established in the last century. Recent major environmental conferences, such as the Copenhagen Climate Change Conference

*Norichika Kanie, Peter M. Haas, Steinar Andresen, Graeme Auld, Benjamin Cashore, Pamela S. Chasek, Jose A. Puppim de Oliveira, Stefan Renckens, Olav Schram Stokke, Casey Stevens, Stacy D. VanDeveer & Masahiko Iguchi (2013) “Green Pluralism: Lessons for Improved Environmental Governance in the 21st Century.” Originally published in *Environment: Science and Policy for Sustainable Development*, 55 (5): 14–30. DOI: 10.1080/00139157.2013.824339. Publisher Taylor & Francis Ltd, <http://www.tandfonline.com> reprinted by permission of the publisher.

(UNFCCC COP 15), the Commission on Sustainable Development's 19th session, and Rio+20, all failed to produce widespread agreements, exemplifying global-level stalemate. Environmental institutions need to recognize that sovereign states no longer tackle challenges alone; globalization requires strong cooperation among nation-states and nonstate actors, such as private companies and private environmental standards organizations, environmental groups, and indigenous people, as well as subnational governments such as municipalities and provinces. Recognition of this need was acknowledged in Agenda 21, signed at the first Rio Conference on Environment and Development in 1992. To tackle the challenges that now face us we need to better recognize a post-national-sovereignty order that mirrors the current dynamics of international relations. A key feature of such post-sovereign governance is the emergence of what amounts to a division of labor among governments and nongovernmental actors involved in environmental governance that comprises global green pluralism.³

This article presents findings from a multinational research project that identified some of the best and worst practices in international and transnational environmental cooperation, in terms of configuration of actors in the performance of various governance components.⁴ We developed hypotheses about best and worst governance practices, which are largely drawn from the extensive secondary literature on international environmental governance and considerations of the motivations and resources of each actor group. The cases span a variety of different environmental challenges and were selected based on their importance for addressing questions about the actors engaged in each particular governance component. [Editors' note: For the full list of hypotheses and cases included, see the original publication].

Actors and Governance Components

Governance is not a homogeneous activity, nor does it refer only to public-sector actors and functions. For years, students of public policy, and more recently international relations, have identified distinct components that must be maintained in order for environmental governance as a whole to be effective.⁵ While labels differ, it is generally understood that these components comprise agenda setting, negotiations, compliance, implementation, and resilience. While there is no linear sequence to their performance—they are often concurrent or even cyclical—many assert that good environmental outcomes tend to be associated with good performance of each of these elements.⁶ Governance includes many possible patterns and institutions connecting different actor types and governing functions. Public, private, and civil society actors engage in governance, and they can be configured and related to one another in different ways, thereby fulfilling a host of governance activities within

and across the components. The sections that follow present the key findings related to the roles of actors in each component that could be useful to consider improving environmental governance in the future.

Agenda Setting

Agenda setting refers to a set of complex processes embedded in larger, ongoing social and political institutions and dynamics, rather than a one-off event or time period. We used the case study of two mature and complex environmental cooperation regimes to evaluate this hypotheses: first, Baltic Sea cooperation aiming to reduce marine pollution and engender more sustainable development in the Baltic region, and second, cooperation at the United National Economic Commission for Europe (UNECE) seeking to reduce long-range transboundary air pollution and its ecological, human health, and economic impacts.

States play important roles in maintaining environmental policy networks during the agenda-setting process, and in this sense shaping state institutions and actors is the most important leverage point for shaping the international agenda over the years. These cases demonstrate the importance of a high-level approach—through periodic ministerial conferences—to agenda setting over time. In the Baltic regime case, bureaucrats became mired in collective action problems, impeding bold actions in the 1980s and 1990s. Ministerial-level discussions and goal-setting exercises amplified broad aspects of scientific and technical consensus, often pushed by “greener” lead states in the region, and setting goals against which policy and environmental progress could be assessed over time.

Related to this is the importance of the regional integration organization. In this case, the European Union (EU) served two important functions: helping raise the level of policies in countries in the Baltic region, as part of the accession process to the EU, and serving as a device to scale up a state-level initiative by the leading states to mobilize international processes.⁷ Although no other regional organizations have the political and economic clout possessed by the EU, other organizations, such as the Association of Southeast Asian Nations, could learn from the successes and failures of the EU in the Baltic region as they work to establish regional communities.

Networks

Networks play an important role throughout the agenda-setting process, and increase in importance over time. For example, the Convention on Long-Range Transboundary Air Pollution operates through a stable, narrow network of parties with a scientific and technical orientation, and therefore might by some be considered

to lack political legitimacy. But in addition to the established scientific parties in the convention, the International Institute for Applied Systems Analysis (IIASA) and the Organization for Economic Cooperation and Development (OECD) are key actors, functioning as important centers of scientific expertise and larger expert networks. They provide models and cost estimates used directly in policymaking at the convention. Importantly, too, representatives of lead states are included in this network, keeping the intergovernmental process inside the process of knowledge development and helping to ensure that state representatives remain well informed about various aspects of scientific and technical knowledge. Business and industry are not explicitly included in the network, but they have interactions with the process through international organizations and the United Nations Economic Commission for Europe (UNECE), as well as working groups on best available technologies.⁸

In contrast, the Baltic Sea case had significantly more actors included in broad, varied, and complex networks. Such broad networks are instrumental in shaping a more diverse and more holistic approach to regional politics and policymaking—and increased legitimacy. However, the broad and complex nature of the networks makes the exact connections between the agenda-setting function and the regime-building process difficult to pin down.⁹ Often, international organizations work to help coordinate these networks. In the long-range transboundary air pollution case, UNECE serves in a secretariat role, and in Baltic development, the Baltic Marine Environmental Protection Commission, known as the Helsinki Commission or HELCOM, served a secretariat function. In both cases, the environmental and technical assessment processes coordinated by the secretariats helped to establish, refine and restate important areas of environment-related knowledge and consensus over time.

Negotiation

Three case studies were used for evaluating the negotiation component. These are the 1987 Montreal Protocol on Substances that Deplete the Ozone Layer; the 1994 United Nations Convention to Combat Desertification (UNCCD); and the 2000 Cartagena Protocol on Biosafety to the Convention on Biological Diversity (CBD). States are the key players in international multilateral negotiations. In the much-studied ozone case, a strong pusher state—the United States—played a key role in forging the agreement, resulting in an effective regime. Agreement was also reached in the United Nations Convention to Combat Desertification and Cartagena Protocol, but the pusher states were exceedingly weak in the former case, while the pusher and laggards were equally strong in the latter case, resulting in less successful negotiated outcomes. Meanwhile, strong epistemic communities,¹⁰ which

are based on a solid scientific consensus, are likely to generate stronger negotiated settlements, as long as opportunities exist for scientists to impart their consensus to the negotiations. Scientists tend to work either with business or environmental actors, which lead to a weak outcome.

Analysis shows that when pusher states work with epistemic communities, the result can be agreements that reflect substantive scientific consensus and are more environmentally effective than those negotiated without scientific participation.¹¹

The ozone case illustrates this well. There were neither lead states nor scientific consensus when the Vienna Convention for the Protection of the Ozone Layer was adopted in 1985, which led to a weak convention with no specific obligations for protecting the ozone layer. In May 1985, scientists with the British Antarctic Survey published data that created scientific consensus, and this, combined with a strong lead from the United States, resulted in an effective Montreal Protocol.

International organizations also have an important role in creating linkages between the network of scientific actors and the negotiation process, which contributes to successful negotiated outcomes. In the successful ozone case negotiations, the United Nations Environment Programme (UNEP) acted as a liaison between the political parties and the network of scientists from UNEP, the National Aeronautics and Space Administration (NASA), the National Oceanic and Atmospheric Administration (NOAA), the U.S. Federal Aviation Administration, and the World Meteorological Organization.

In contrast is the case of the United Nations Convention to Combat Desertification, where strong scientific networks existed and there was also a strong epistemic community around desertification and dryland degradation. However, there was a mismatch between these communities and issues discussed in the negotiations. In fact, the negotiations revolved not around commitments to environmental conservation actions but around economic and social development issues of concern to developing countries, especially in Africa. No international organizations intervened to create an effective link between the network of scientists and the multilateral negotiation process. And while the secretariat did create a scientific expert panel, called the International Panel of Experts on Desertification (IPED), its inputs into the process were minimized partly because the panel came late into the process. By the time the convention was being negotiated, issues such as the definition of desertification were already determined. There was limited time to provide expert reports, which arrived too late in the negotiation process to have significant impact on agenda setting and thus the text of the convention.¹²

Agreements are more successful when there are networks across actor groups, but quality of the network matters. There was a strong and uniform network over time in the ozone case, which was one contributing factor to the successful agreement. The core of this network was made up of scientists, staff of government agencies in pusher states, international organizations, and environmental nongovernmental

organizations (NGOs). The scientists, who did not have sufficient consensus in their own community, needed the support of powerful allies, such as the Natural Resources Defense Council, the National Academy of Sciences, the media, U.S. government agencies, the World Meteorological Organization (WMO), and other pusher states. This policy network raised public awareness about consequences of chlorofluorocarbon (CFC) emissions for stratospheric ozone and put pressure on negotiators to control these substances. In the Cartagena Protocol, there were two opposing networks reflecting the two opposing blocks in the negotiations—a network of states who were wary of biotechnology led by EU members, some scientists and many environmental NGOs on the one side and major grain exporting states, pro-biotechnology scientists, and industry representatives on the other side. The result was an agreement that was neither very effective nor universal. In the UNCCD case, there were no discernible networks across actor groups, except for the NGOs, and the agreement was exceedingly weak.

The influence of NGOs often depended more on their ability to network or to cooperate with state parties than on their ability to participate in the negotiations. It is often believed by researchers, practitioners, and policy analysts that the more NGOs have access to the negotiations, the more successful the negotiated settlement will be, as environmental NGOs are considered to be the true champions of the environment. Interestingly, the cases do not support this assumption, as the NGOs had the least access during the Montreal Protocol negotiations and the most access during the UNCCD negotiations. On the other hand, when states and business and industry groups are concerned about trade implications they can often block efforts to create effective negotiated settlements. In the end, participation is about the legitimacy of the process rather than about the success of the negotiation, and NGO participation is often contested among states.

Compliance

Compliance is about adherence to the negotiated settlement, and the issues of ship pollution, fisheries, and nuclear waste (under the Convention on the Prevention of Marine Pollution by Dumping of Waste and Other Matter, generally known as the London Convention) bring out how various actor configurations can support certain *compliance tasks* of international environmental governance: verification, review, assistance, and sanction.¹³ Best-practice compliance systems create and expand transnational enforcement networks, reinforce domestic compliance constituencies, and expand the number and categories of actors capable of sounding the non-compliance alarm. Such enforcer networks are particularly potent if they are supported by procedures that allow other categories of actors, primarily transnational networks of environmental nongovernmental organizations

and multinational companies, to provide additional information about state or target-group adherence to international rules.

Information is key to all four compliance tasks. In the case of ship oil pollution, partly overlapping memberships among IOs at sub-regional and regional levels helped states to integrate a networks of enforcement agencies that tap traditional sources of information—such as physical inspection (port-authority members of the Paris MOU¹⁴) and aerial surveillance (aircrafts coordinated under the Helsinki Commission)—and one with access to complementary, new technologies—such as a satellite observation system (the Clean-SeaNet Service under the EU-based European Maritime Safety Agency)—results in more efficient use of costly inspection tools and better compliance.

The ship pollution case also illustrates the importance of a centralized database that—when maintained by the Secretariat of the Paris MOU—can provide continuously updated information on verification activities and associated findings. If integration works well, suspected vessels are likely to face inspection when they enter the next port. Such inspection will involve checks of physical equipment, the crew's operational capability, and a range of compulsory log books, including the oil record, allowing cross-checking of consistency. Here an actor configuration involving multinational companies developing and marketing new technologies, nation-states with authoritative inspection competence, and an international organization (the Paris MOU) with the capacity to coordinate verification, review, and enforcement activities proved to result in a good practice.

A good compliance system expands the transnational enforcer network, through either rule design or the deliberate management of relevant international institutions.¹⁵ Good compliance performance can emerge from well-designed rules that allow an expansion of the number of actors involved in the compliance review. An example of this is the transition from the use of discharge limitations to gradually phased-in equipment standards for new ships in the ship pollution case. To circumvent the new rules, a vessel owner would need partners in crime not only in the shipbuilding industry but also among the classification and insurance companies whose services are necessary for entering ship registries, winning freights, and gaining access to ports. The design of the rules thus expanded the number of actors involved in the compliance review, while also ensuring that the compliance review set in at the vessel-construction stage, before any violation could occur. In the 1970s, the share of the world tanker fleet estimated to be in compliance with existing discharge standards was as low as 50%; however, shortly after implementation of the new rules in 1982, compliance was close to 100%.¹⁶

Sometimes objectives other than environmental sustainability can provide assistance in improving compliance. For example, reports on Soviet and Russian dumping of nuclear waste were perceived by some Western states as an opportunity to get

Russia involved in broader collaboration in the Arctic, where East–West relations had been chilly for decades due to the region’s central role in mutual strategic deterrence throughout much of the postwar period.¹⁷ Key to the subsequent improvement in compliance performance under the London Convention, which prohibits dumping of high-level radioactive waste, was the recruitment of the most relevant segments of Russia’s “power agencies”—those responsible for the nuclear and the military sectors—into the domestic compliance constituency. That was possible thanks to the Western funds and expertise made available under several IOs, including the London Convention, for developing and implementing programs aimed at enhancing Russian capacities to treat and store various categories of nuclear waste and to transport waste out of the region. The largest source of foreign funding for such projects has been the U.S. Cooperative Threat Reduction program, linked to international agreements on strategic arms reduction.¹⁸ Improvements in compliance have been brought about by the expansion of institutional boundaries of the compliance system in the case of illegal, unregulated, and unreported fishing in the Barents Sea, a very productive part of the Northeast Atlantic. The coastal states adjacent to this sea, Norway and Russia, have recently been able to deal with this fishing by expanding the institutional boundaries of the compliance system from their bilateral regime, centered on the Norwegian-Russian Joint Fisheries Commission, to a multilateral regime comprising all major market states (many of them laggards in fisheries enforcement)—the North-East Atlantic Fisheries Commission (NEAFC).

This change was aided by an expanding coalition of a pusher state, Norway, later joined by Russia as well, and environmental nongovernmental organizations using information legitimized by a transnational enforcer network and an epistemic community. The involvement of the epistemic community in compliance review was important because it enhanced the credibility and legitimacy of the compliance information compiled by the pusher state. The mobilization of the broader NEAFC compliance system for the enforcement of rules established under a narrower regime, the Norwegian-Russian Joint Fisheries Commission, raised the credibility, saliency, and legitimacy of the compliance review and also minimized the tension between the trade-restrictive port state control sanctions and international trade rules.¹⁹

Implementation

The way implementation is conducted often affects ways the other components are operated. For example, implementation provides feedbacks to continuous agenda-setting, as the implementation became an important item on the Baltic and LRTAP agendas as the number of environmental goals and programs added up. In most cases implementation follows or is affected by negotiation and international

agreements. Connectedness between an international negotiation process and implementation on the ground is, therefore, a key for best practice implementation. The disconnection between negotiation and implementation becomes particularly severe when it comes to funding issues, because donors, recipients, and international agencies may have different accountability mechanisms and priorities. There can also be mismatches between decision-making organizations/processes and implementing or funding agencies, so matching decision-making bodies for defining agreements and for funding implementation is key to improving implementation effectiveness. In the Montreal Protocol, for example, the same donors and recipients of funding (developed and developing countries) in the agreement processes are influential in defining funding implementation through the Multilateral Fund for the Protection of the Ozone Layer, securing a closer coordination between negotiations and funding/implementation. Conversely, the dynamics of the negotiations on funding and donor-recipient relations should well be reflected in the negotiation.

Meanwhile, implementation differs between developed and developing states, and between states with strong capacity and weak capacity.²⁰ Vigorous capacity building by international organizations or developed states is likely to render more effective implementation in developing countries, but that capacity building has to target the “right” governmental agencies/officials or nongovernmental actors (e.g., companies). Capacity building on a national level is not enough; best practices suggest the inclusion of local governments and firms, which influence the implementation at the ground level but seldom have their voices represented in the negotiation or funding processes. Implementation of the ozone regime in China showed improvements when involving local governments, as they had the greatest influence over firms producing ozone-depleting substances (ODS). As a result implementation of measures to reduce the production of ODS started to move smoothly.²¹ In contrast, in the case of Brazil, implementation was hindered by a lack of capacity building at the local level—that is, small repair shops for air-conditioning or refrigerators, which manipulate large quantities of ozone-depleting substances, were not given the tools to recycle or properly dispose of the ozone-depleting substances, hindering the effective collection of ODS by those actors.²²

Resilience

Resilience has come to be considered an important governance component in recent years, although less attention has been paid to it than to other governance components. Resilience entails maintaining a dynamic balance among social changes, governance, and environmental conditions. As programs mature, they must adapt to internal political changes external environmental fluctuations in order to remain effective and relevant. Resilience entails not only a dynamic agenda setting process

but also flexibility in adjusting other governance components to a changing policy environment.

Our study investigated the actor configurations in UNESCO's Man and the Biosphere Programme, the Convention on International Trade in Endangered Species, and the Convention on Biological Diversity.

The cases showed that major contributors (both states and multinational corporations) need to be a part of the governance arrangements, directly or indirectly, in order for the arrangements to be resilient. The Convention on Biological Diversity is the clearest example of how lack of a major actor and the resulting broad, shallow networks prevents the governance arrangement from adapting to changing conditions. The almost universal membership of states and a large amount of participation by nongovernmental organizations does not cohere into a network which can shape the governance arrangement. For example, only 22% percent of nongovernmental organizations have participated in more than one Conference of Parties and only 2.5% percent have attended all five meetings between COP1 and COP 5.

In contrast, the Convention on International Trade in Endangered Species shows how the United States and Europe as pushers together can be important. They joined and pushed together on a number gradual development of focused networks can facilitate gradual adaptive governance. While states with large wild elephant populations were split on governance (with Gabon burning its entire ivory stock and other countries pushing for managed or full trade of ivory stocks), the United States and Europe, with technical assistance from important nongovernmental organizations, were able to construct clear and stable procedures for reaching governance decisions about ivory stocks. Adapting from a context of highly politicized debate, the tight networks of pushers were able to transform the entire discussion towards a process that is seen as widely legitimate within the various states and no official exemptions to the ivory restrictions has been claimed by any state for many years.

The involvement of nongovernmental organizations best fosters resilience—and avoids the wide politicization of issues throughout the organizations like in the case of the CBD—when programs operate “polycentrically”²⁰ at the national level, complemented by multi-scalar (but not hierarchical) networks between the international system and the national decision-making space.²³ The World Network of Biosphere Reserves in UNESCO's Man and the Biosphere Programme, for example, fostered resilience significantly through a polycentric arrangement with local biosphere reserve managers and stakeholders, national Man and the Biosphere Programme councils, the international coordinating council, and outside scientific advice interacting on focused tasks. This polycentric network of actors connected together was able to respond to significant political shocks (like the United States and United Kingdom withdrawing funding and support of UNESCO in the 1980s and difficulties with the establishment of early biosphere reserves in the developing world) and transform the biosphere reserve concept to include rural communities in the management of the reserves.

Groups where members fail to recognize one another's legitimacy have difficulty fostering resilience. The Convention on Biological Diversity and the early years of the Convention on International Trade in Endangered Species suffered from legitimacy problems, and this restrained the resilience. Rather than a statement of agreement to the terms or norms of the Convention on Biological Diversity, joining the Convention was simply a symbolic protest by many states to U.S. reluctance to join the agreement. Meanwhile, before 1994 the Convention on International Trade in Endangered Species was less resilient and had difficulty in adopting decisions because of the politicization of many of the different organs of the agreement. With reform, the organization operationalized focused selection procedures of actors and made the procedures for listing species a regimented and transparent process. The scientific basis of the Man and Biosphere Programme facilitated significant legitimacy among members and helped the organization withstand the larger political problems being faced at the time.

Inclusion of key actors, polycentric network structures, and legitimacy between members then all facilitate resilience in the different agreements. Resilience also proved to be an important aspect in the overall effectiveness of the different governance arrangements: the Convention on Biological Diversity has seen little development of rules that will improve biodiversity conditions, the Man and Biosphere Project has increasingly developed lasting reserves with regular assessment around the world, and the Convention on International Trade of Endangered Species has shown improved conditions of many of the species being managed.

Dynamics of Actor Configuration

While configurations of actor groups do correlate well with the performance of various governance components, the actual makeup of these groups in terms of specific actors varies widely. Involvement of nongovernmental organizations or epistemic community or firms in a particular component for one particular program does not mean that the same actor will be involved in other components. Environmental governance with an actor-based focus is highly differentiated. The now extensive case-study literature seems to support this notion that few individual actors recur in multiple programs or components.²⁴

Networks and Configurations of Actor Groups

Our study suggests that no single actor exercises influence independent of other actors. Governance can be a creation of the synergistic or conflictive joint behavior of actors. Untangling actor configuration and examining the cause of best governance practices composed of synergistic actor relations is an important task. Table 11.1 provides examples of how the actor groups are organized in a number of cases.

TABLE 11.1 Organizations of actors groupings

Case	Organization of Network	Key groups	Contribution to Performance Component
Baltic agenda setting	Expansive network	NGOs, MNCs, IO secretariat	High
LRTAP agenda setting and negotiation	Technocratic network	Scientists, states, IO secretariat, MNCs (through IO)	High
Ozone agenda setting, negotiation and compliance	Advocacy coalitions and network of IO and science	Scientists, MNCs, states, IO secretariat	High
Biosafety agenda setting and negotiation	Advocacy coalitions of conflicting networks	NGOs, scientists, states, IO secretariat	High (negative)
UNCCD negotiation	Advocacy coalition of NGOs and states	NGOs and states	Low
Fisheries compliance	Expanding multilevel technocratic network	States, IO, scientists, some MGOs	Low, then high
Ship pollution compliance	Expanding multilevel technocratic network	IO, states, MNCs	Low, then high
Nuclear waste-dumping compliance	Expanding multilevel technocratic network	IO, states, NGOs, MNCs	Low, then high
CITES, MAB resilience	Multilevel network	Scientists, states, NGOs, MNCs	High

Source: Table created by authors

Actor groups operate as networks in a number of cases as indicated in Table 11.1. In these instances, actor groups interacted with one another on a regular basis over time. Members shared common goals of addressing a particular environmental threat and realized a division of labor based on different capabilities from which each and all stood to gain from exchange. This exchange was often information, but at times (such as with partnerships and in the Baltic Sea cooperation example) it rested on the legitimacy that actors acquired from participating in the governance operation.

Information is often a key resource that actors value and share within the network. Asymmetries in information possession encourage actors to operate together. The density of actors in the Baltic and in long-range transboundary air pollution, for example, constitutes a network of actors who regularly interact over time and share common goals. Meanwhile, in the case of ship pollution, integration of traditional sources of information and new technology-based information with satellite observation system creates an effective network for compliance.

A multilevel network involving actors in vertical and horizontal levels of governance contributes to resilient governance through the rapid flow of information in a variety of conservation governance schemes, including MAB. The collective benefits that accrue from information sharing and from the conversion of that information to compliance keep the actors committed to a network. Conversely, the arrangement of actors within partnerships appears much closer to more transitory advocacy coalitions, where nongovernmental organizations and companies each remain voluntarily within the configuration as long as they believe that their interests are satisfied. In these cases, networked configurations seem to contribute to stronger and more resilient governance than do more short-term configurations of convenience.

These networks were technocratically based in some instances, such as the organized connections between scientists and international organizations in the long-range transboundary air pollution case and the ozone case, or the steadily deeper interactions among regional enforcement agencies in the early stages of the fisheries case. The network has scientific and technical orientation. In others the networks were more expansive, drawn from broader actor groupings who were more interested in policy outcomes, mobilizing concern, and attracting financial resources. One limit to nontechnocratic networks, such as in the Baltic, is the need for nongovernmental organization to temper their critique and public scrutiny and public advocacy activities in order to maintain a working relationship with multinational companies within the network. In still other arrangements the actors were organized into groups based on self-interested convenience to form advocacy coalitions. In these instances, groups came together occasionally, but lacked the continuity of networks and knowledge communities, and thus lacked resilience.

Partnerships: A Special Kind of Actor Configuration

Private partnerships often complement programs by filling regulatory or governance gaps when intergovernmental cooperation fails or is not undertaken. The most outstanding characteristic of private partnerships is the non-state-centric nature of the arrangement.²⁵ The promise of private partnerships is to influence global supply chains and thereby directly influence economic activities, with potential positive results for global social and environmental problems.

The configuration of actors is vital for understanding the form and effectiveness of these private partnership systems of governance. Firms tend to support more demanding guidelines when they are already largely in compliance with such guidelines. Hence, the firm "leaders" tended to be actors that, for other reasons, already had operations that are close to the standard of a private partnership program. Industrial players that either fear losing autonomy through such partnerships and/or view

standards as imposing additional requirements might be viewed as “laggards” in that they will either support no private partnership at all, or will join or support a more “business-friendly” alternative. While this finding might explain initial support for private partnerships, the trick, for social scientists and international relations scholars, is to understand how to nurture implementation so that non-“leaders” come to view participation as beneficial. This, in turns, means paying attention to why motivations might occur and/or be encouraged. Such an orientation means paying attention to both logics of “consequences” but also “appropriateness”.²⁶ What we can say is that implementation occurs best when there is participation from firms and NGOs throughout the supply chain, entailing many different types of firms (the ultimate seller, buyers, traders, retailers) spread geographically. Such efforts work best when there are informed and affluent consumers in the final market. Thus such schemes have the *potential* to be most effective when business-to-consumer transactions occur, such as for retail goods (including fish and forest products), than for intermediate goods used by industry (business-to-business).

Conclusion

The different categories of actors in environmental governance are not monolithic; the configuration and combination of actors influence the success or failure of environmental governance components. A few general observations can be made from the case studies just examined. First, international organizations have an important role in managing scientific networks and linking them with intergovernmental or governmental processes, be it agenda setting, negotiation, compliance review, or capacity building. They are not just administrative bodies to manage logistical issues and present reports, but have a greater role in managing networks. As science is essential in solving environmental problems, international organizations’ ability to link science with governance components may become an important factor to determine success or failure of solving the problems.

Second, nation-states are still important for successful governance, particularly in terms of networking of actors. An alternative to governance with states is private partnerships. Here we ought to employ a broader perspective to oversee different but related development in the field, because firms that are already close to the standard of a program tend to be leaders of the program, while laggards in that context can lead to a competing program. To avoid escape from stringent rule adherence and compliance, nongovernmental organization oversight appears to be important.

Third, linking environmental issues with the outside issues and interests could pave the way to problem solving. The role of the EU in creating a more sustainable Baltic Sea and the involvement of powerful agencies in Russia in the nuclear waste dumping problem are good examples of successful links between environmental

and nonenvironmental issues. Environment can also be used to solve other outstanding issues by triggering cooperation in the situation of conflict, such as in the case of long-range transboundary air pollution or nuclear waste dumping. Networks of actor groups and overlapping institutions involving nonenvironmental issues—such as the EU—are key for such an arrangement. The same logic might be used to find a way to cooperate between states with less communication, such as with North Korea.

Environmental governance in the 21st century—in what is being referred to as the “anthropocene” era with environmental issues at the forefront—requires different types of governance from what we saw in the 20th century. But achieving this new type of governance will require a network of stakeholders from diverse areas, working together to solve some of our most pressing problems while simultaneously securing earth’s life-support system. The key to finding workable, lasting solutions is to find the right way to configure and engage this network of stakeholders for improved resilience. But it will not be possible to do this without a public policy oriented to capture the dynamics of the network of actors and delegate authorities to them. The elaboration of a set of Sustainable Development Goals (SDGs) as part of the post 2015 development agenda may provide a venue for triggering such governance transformation. Unlike traditional approach to environmental governance centered on international regimes, the new goal-oriented approach is required to mobilize multiple different actors and networks for the simpler purpose of attaining goals that should simultaneously address environmental, social and economic concerns in an integrated manner.²⁷ Starting from agenda setting, which is just beginning, the process requires effective actor configuration. Our findings can contribute from here.

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A WISH LIST FOR AN ENVIRONMENTALLY FRIENDLY NAFTA

JENNIFER HUIZEN*

[Editors' note: This article was published shortly before Canada, Mexico and the United States reached provisional agreement on a new trade accord to replace the North American Free Trade Agreement (NAFTA). As we go to press, that agreement has yet to be formally ratified by the parties.]

With the North American Free Trade Agreement negotiations (let's call it NAFTA 2.0) still in a state of limbo, experts worry Mexico, Canada and the U.S. may bail out of what President Donald Trump has repeatedly called "the worst deal ever made."

The possibility of a tariff and trade war over steel and aluminum has complicated and delayed the negotiations. And earlier foot dragging has already resulted in Brazil being the recipient of large scale corn and other commodities sales to Mexico that would have otherwise gone to U.S. farmers. If NAFTA negotiations fail, U.S. agriculture could take a further blow, along with American automotive and electronics industries; even potentially upsetting global economic stability.

But the unlikely winner in this newest rendition of the Art of the Deal could be North America's, and by extension the world's, environment.

Though the original NAFTA agreement included environmental add-ons that appeared progressive, those provisions mostly existed on paper. And the three-country

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agreement has done little environmental good, and a whole lot of bad. The secret NAFTA 2.0 negotiations now underway – which include input from government and transnational corporations but not environmental NGOs – seem unlikely to enforce those add-ons. So once again, it seems whatever negotiators agree to, there's little hope tough environmental standards will be included or implemented.

From a purely environmental perspective, scrapping the treaty may be the best outcome for everyday people and the planet.

The wish list of things that need to change in order for NAFTA 2.0 to be environmentally friendly is daunting and unlikely to occur in the current political climate. But Mongabay spoke with experts from across North America to compile that wish list anyway, with the hope that if it isn't approved as part of NAFTA 2.0, it might be adopted for future trade agreements.

Remove Chapter 11 or Reform the ISDS

The top issue experts identified as the overarching problem with NAFTA 1.0, and very likely NAFTA 2.0, is Chapter 11 and the infamous Investor State Dispute System (ISDS), which allows private companies and corporations to seek taxpayer compensation for failed investments, a strategy that can often result in the undermining and bypassing of national environmental laws and regulations.

Two-thirds of the ISDS cases brought against Canada have involved environmental resources or legislation, and Canada and Mexico have paid a combined \$376 million dollars of taxpayer's money to pay for failed ISDS suits, with billions more still unsettled.

Mongabay has delved deeply into the various flaws with ISDS in the past, and as Sujata Dey, Trade Campaigner at the Council of Canadians, summarizes: "No matter what other changes they make, unless ISDS and Chapter 11 are removed from NAFTA outright, it won't be a good deal for people or the planet."

Experts agree that if Chapter 11 is left standing as part of NAFTA 2.0, then ISDS would have to be reformed and disputes settled in domestic courts or state-to-state mechanisms, not in secret courts that operate beyond the national rule of law. In a move of epic irony, the Trump administration announced a preference for Chapter 11 to be available to each nation on an opt-in or opt-out basis. It seems that at some point during negotiations, or likely afterwards, each country would decide whether or not to adopt Chapter 11 and all its associated risk, or allow trade lawsuits to go through domestic courts. With no U.S. cases currently pending with ISDS, and the Canadian government facing a 500-million dollar plus ISDS fine, Trump's proposal seems a questionable request.

Several experts point to Canada's Investor Court System (ICS), recently accepted under the Comprehensive Economic Trade Agreement (CETA) with the European

Union, as a potential replacement for ISDS. Scott Vaughan, an official with the International Institute for Sustainable Development (IISD), noted that countries with growing economies, like Brazil, have been developing more equitable investment models with improved dispute resolution systems, mechanisms that could become part of NAFTA and other future trade agreements.

Remove Any Reference to Water as a Common Commodity

An annex of NAFTA defines water as a “commodity and service,” meaning it can be both traded and invested in.

Canada has one of the world’s largest remaining supplies of clean drinking water. While Canadian experts noted that this provision appears favorable to Canada, it isn’t. All of Canada’s individual provinces currently prohibit the bulk export of water, but if one province altered the rules, a corporation could use ISDS to force a change in domestic laws to gain approval of water export from the others.

“As water is becoming more scarce, companies are recognizing its value,” Dey warns. “Water is becoming an investment tool much like oil once was; it’s lucrative and full of derivatives. It’s time to start thinking about one of our most precious natural resources differently in trade deals.”

Remove the Energy Proportionality Rule

Under a clause in NAFTA known as the energy proportionality rule (EPR), Canada is required to maintain or increase its rate of energy exports to the U.S. in perpetuity. Canadian energy exports to the U.S. have risen approximately 527 percent since NAFTA was signed, and nearly all of that growth has been through crude oil exports. Mexico has now indicated its desire to adopt the proportionality clause to bolster their oil and natural gas markets.

Clearly, the EPR can be used to tie a nation’s hands, preventing it from taking needed steps to curb climate change. “If Canada wanted to cut back on oil exports and prop up renewables, the proportionality clause would not allow that,” Dey explained, adding “studies have shown, that under the rule, the transition to renewables will take much more time, money and resources.”

Ben Beachy, Director of the Sierra Club’s Responsible Trade Program, confirms that view, adding, “Some goods are simply not compatible with free trade and the public good, and fossil fuels are one of them.”

Tom Russo, President and founder of Russo on Energy LLC, and former Manager and Senior Energy Industry Analyst at the Federal Energy Regulatory Commission

(FERC), cites a hypothetical example to show how the NAFTA agreement could have a totally unforeseen, but positive, environmental impact:

Mexico is currently looking to green their energy market by replacing coal-fired electric plants with cheap and plentiful American natural gas easily accessible through already extensive and expanding pipelines. Losing NAFTA could cause increased tariffs; making American natural gas exports more expensive and far less alluring.

“Mexico has a proud, independent heritage,” Russo added.

It could easily be persuaded to look to others for help developing their energy markets, like China and Russia. If Mexico is successful in greening their electric sector, it opens the door for renewable energy development in the country, and eventually its neighbors in the Caribbean. The General Electrics of the world are in Mexico looking to invest, and Mexico is looking to make big traction on Paris Agreement commitments by announcing their intent to develop solar and wind energy. There could be a bright spot there.

Include the Paris Climate Agreement and Sustainable Development Goals

Despite the fact that there has been no clear mention by any of the three countries’ trade representatives who are negotiating the new agreement, every expert interviewed noted that NAFTA 2.0 must include global, binding climate commitments.

“We’re realizing more and more that the environment is the ultimate determinant of health,” said Dr. Courtney Howard, President of the Canadian Association of Physicians for the Environment (CAPE). Dr. Howard explained that everything necessary for human civilization to thrive also contributes to human health, such as access to clean drinking water and air, and stable social and economic systems. Policies that were previously considered relevant only to the environment must now be considered relevant to human health, she concluded.

Groups like CAPE have taken up that cause by demanding NAFTA renegotiations include health, environmental, societal and cultural impact assessments. “Now that climate is finally at the top of everyone’s mind, we need to act” Dr. Howard urged.

Along with other Canadian civil society groups, CAPE is also calling for NAFTA 2.0 to remove ISDS, to include Paris Agreement principles, and dispose of intellectual property laws, like those proposed in the TPP, Trans-Pacific Partnership, trade agreement, that may interfere with Canada’s prescription drug market.

People don’t always think of trade agreements as obvious climate agents, but Vaughn points out that the TPP treaty (signed by Canada, Mexico, and nine Asian-Pacific nations but not the U.S.) includes language concerning low-carbon

transitions, renewables and clean energy. “NAFTA is a [negative] climate agent in the sense that it incentivizes the perpetual production and dependence on fossil fuels,” said Beachy, who added, “if we could get positive, forward-thinking environmental and climate ideas into a new NAFTA, it would be a very good thing.”

Protect Supply Management and Sustainable Agriculture

The NAFTA model revolves around exporting more goods at cheaper prices, but at what cost? As the move towards more competitive, large-scale industrial agribusiness farms accelerates from the cornfields of Mexico, to the winter wheat fields of western Alberta, the economic pressures on small scale, family farms to compete and survive keep on building.

“When it comes to agriculture,” Sharon Anglin Treat, a Senior Attorney with the Institute for Agriculture and Trade Policy (IATP), noted that

the result has been a real race to the bottom with massive consolidation of the entire industry across all three countries. By conservative estimates, at least 2 million Mexican small farms, and 200,000 American small farms, have been lost in the wake of NAFTA.

Treat uses recent changes to livestock production as an example of the impact NAFTA has had on agriculture: an estimated 90 percent of small pig farms in the United States have shut down in the past two decades and been replaced with a complex industrial process reliant on an incredible amount of wasted resources. Remarkably, most North American pigs now spend a portion of their lives being shipped between Canada and the U.S., and even Mexico, before they’re ready for slaughter, following cheap feed and relaxed standards.

“There are still pig farms,” explained Treat. “They’re just owned and operated by a handful of transnational corporations who are also involved in producing biotech animal feed, growth chemicals and running slaughterhouses.” Karen Hansen-Kuhn, Director of Trade and Global Governance with IATP, adds that this shift catalyzed by NAFTA has resulted in 85 percent of the U.S. meat industry now being controlled by only four companies.

There are other examples of NAFTA’s devastating effects on small farmers. Many staple crops in North America are now sold below the cost of production, especially corn and soy, to improve exports. “NAFTA has led to a 400 percent increase in the amount of corn exported from the U.S. to Mexico” said Hansen-Kuhn. “This has led to the displacement of more than 2 million Mexican family farmers, many of whom moved to cities, sought factory work, or moved to the United States.”

On the table for NAFTA 2.0 is an American demand that Canada drop its Dairy and Poultry Supply Management System. Hansen-Kuhn explained that Canada’s

system tracks the sale of all dairy and poultry products within Canada, including imports and exports, then uses this information to create a set of production quota, prices, and trade restrictions.

“This ensures fairly stable prices for farmers and producers, and greatly reduces the risk of oversupply,” Hansen-Kuhn explained. “Canada’s standard hormone-free milk is roughly the same price as hormone-free certified milk in the U.S. where the strategy is to just keep overproducing even as prices continue to fall.”

Hansen-Kuhn said U.S. dairy farmers have openly supported Canada’s Dairy Supply Management System, and want it exempted from NAFTA 2.0. It’s unclear just what will play out, given the past tendency of large farm organizations to align themselves with big industry interests.

“Overall, NAFTA may seem like a good idea in the grocery store [where prices may be lower], but in terms of sustainable agriculture and the communities that it supports, it’s been devastating,” Treat said. “We should have stopped using this model a decade or more ago, hopefully now’s the right time to make a change.”

Axe Regulatory Cooperation and Harmonization

“Regulatory cooperation and harmonization” is trade-lingo for trying to make each trading country’s domestic regulations more consistent with one another in an effort to remove so-called needless trade barriers.

The problem occurs when biotech, chemical, and pesticide industries all want to lower the regulatory requirements needed to approve products and deem them safe under the guise of regulatory cooperation and harmonization. Treat noted that one proposal would allow a product approved in one NAFTA country to be automatically approved in all three – that could result in another race to the bottom environmentally.

Treat also points out that all sorts of government labeling requirements are likely to be challenged utilizing NAFTA 2.0, as has happened under NAFTA 1.0. And a myriad of battles involving animal welfare and food production regulations are on the current negotiation docket.

Treat said:

A proposal in the TPP made it harder for producers to label their products, which ultimately makes it harder for consumers to choose what they buy and eat, and to support sustainable farming by selecting local products over ones shipped from, say, China. ... This kind of thinking seems pretty out of whack with modern-day demands for smaller scale, local, ethical farming.

Again, what is good for transnational agribusiness is not necessarily good for local people, their communities or the environment.

Fully Fund the CEC and Give It Some Teeth

It seems the only major environmental drawback to losing NAFTA outright would be the loss of the Commission for Environmental Cooperation (CEC), the eco-watchdog council established under NAFTA's Environmental Side Agreement.

Currently running on a shoestring budget (estimated at US\$9 million annually), and lacking legal power, the CEC is meant to coordinate environmental efforts between Canada, the U.S. and Mexico. It's tried to be useful, but without proper financial resources or legal authority, the CEC has been hobbled.

The CEC has created some valuable environmental tools, many in the form of large data sets like the North American *Pollutant Release and Transfer Register* (PRTR) project, which makes industrial pollutant data available across North America. Most experts agree the CEC needs more support, credit and money to continue its unique mission. "You get what you pay for," Scott Vaughan of the IISD said. "While the CEC has always been pretty low-profile, it's done a lot of good work and improved our understanding of the state of the environment across North America."

Linda Duncan, a Member of Parliament for Edmonton Strathcona, and the former head of law and enforcement for the North American Commission for Environmental Cooperation, said that the three NAFTA parties themselves were to blame for the CEC's shortcomings:

Having worked for the CEC, I know first hand that it's a very valuable institution, and would be even more so if the environment ministers could do their job and hold governments accountable for all the things actually in the [NAFTA] Side Agreement.

The CEC is meant to work alongside each nation's Free Trade Commission, ensuring a place at the table for civil interests and environmental concerns. In trade deals Canada has signed since NAFTA, it allowed government bureaucrats to evaluate whether environmental policies are being enforced in what many critics see as an incredible conflict of interest.

"The system already set in place by the Side Agreement in NAFTA, having an independent, paid body of people reviewing and enforcing environmental actions of governments, is far preferable to current practice," Duncan emphasized,

and though I entirely agree the Side Agreement needs to be moved into the NAFTA text, we should not completely discount the mechanisms and institutions it established. If anything they certainly should be incorporated and strengthened in a new NAFTA.

If the CEC was fully funded and supported, she adds, it could effectively hold President Trump and the U.S. accountable for walking away from the Paris Agreement,

or cutting environmental funding. Despite that possibility, the U.S. has indicated a desire to move the Environmental and Labor Side Agreements into the main text of NAFTA 2.0 to “establish or maintain a senior-level Environment Committee, which will meet regularly to oversee implementation of environment commitments, with opportunities for public participation in the process.”

The U.S. position fails to mention the CEC, so it is difficult to ascertain negotiators’ intent, though it doesn’t take a crystal ball to predict that the Trump administration will not be pushing to boost CEC funding or power, given its stated goal of dismantling domestic environmental programs and regulations.

Acknowledge Indigenous and Native Rights, Not Free Trade Incentives

Canada’s list of NAFTA 2.0 goals includes a chapter on Indigenous Rights. While no one is sure what that means exactly, it sounds like a good idea considering that natural resource exploitation projects frequently impact indigenous lands and communities. But so far it seems, experts said, that the only purpose of this new chapter in NAFTA 2.0 is to increase indigenous trade, rather than provide protections.

“As far as we can see, Canada is taking an economic approach to indigenous trade, not a rights-based one,” Dey said.

We would like to see the UN’s Declaration on the Rights of Indigenous Peoples brought into the [NAFTA] chapter at the very least. We must protect [Canadian] rules that dictate indigenous people are always consulted on trade deals and laws.

Neither the U.S. nor Mexico has made mention of a stance on indigenous trade rights. In Mexico, however, the war to save the country’s native maize industry and indigenous farming practices rages on, so there’s a minor chance for traction.

Make a Place at the Bargaining Table for People and Planet

Since the very beginning of the NAFTA negotiations, various environmental and civil groups have argued that the trade treaty offers a great deal to big business, but an empty promise to everyday people and the planet.

“The reason for many of the ultimate problems with NAFTA is that it’s an agreement written behind closed doors by polluters, and the public is entirely shut out,” Beachy said. “Many elements of NAFTA allow corporations to move operations to a place with the lowest cost of business and the loosest environmental regulations, and even challenge, and eventually weaken, or toss out, domestic regulations they don’t like.”

“This isn’t a hypothetical race to the bottom, it’s a concrete one,” Beachy concluded.

He cites a clear-cut example in a case of lead poisoning in Mexico. American factories used to recycle lead-acid batteries until 2009, when new regulations made the process more expensive. In response to the regulations, factories began shipping batteries to Mexico where environmental restrictions regarding lead are looser, and most environmental laws poorly enforced. “In this case the U.S. lost recycling jobs and Mexico got [toxic] lead. NAFTA effectively allows corporations to export their pollution.”

In Naucalpan de Juárez, a Mexican town that saw a surge in American lead-acid battery imports, babies are now being born with lead in their blood, lead-associated birth defects, and low body weight.

An Uncertain Future for NAFTA 2.0

Treat worries that in the end, NAFTA 2.0 negotiators will settle on some sort of TPP-style agreement, even though Trump withdrew from those negotiations. “The TPP is, in essence, the NAFTA model made far worse by things like regulatory cooperation,” she explains. Based on the few NAFTA 2.0 documents the U.S. has released so far, environmental concerns may be framed just as in the TPP: lofty, vaguely defined and not legally binding.

CAPE’s Dr. Howard hopes NAFTA 2.0 will receive a full analysis by the Canadian government and the Canadian people before being ratified:

The more experts review the text and have a chance to provide feedback, the better. There’s always the chance we could get positive thoughts in the text before everything’s said and done. A lot of the real underlying issues with free trade agreements stem from a lack of outside, public involvement and awareness.

Vaughn echoed this optimism:

If there was ever a time when the climate and environment needed to be redrafted in the context of free trade, it’s now. I don’t believe we have to give up on the idea of free trade, just improve the process of how we go about it pretty substantially.

As NAFTA 2.0 negotiations drag on, each of the three governments involved has indicated at one time or another that they would consider walking away from the bargaining table. Canada actually did once before during 1987 negotiations for the US-Canada Free Trade Agreement, and over the same sticking point as that cited today: the removal of Chapter 19 protections against anti-dumping and countervailing.

The public, thanks to the determined outreach work done by environmental and civil NGOs, along with devoted politicians, has come to recognize the inherent threats associated with large free trade agreements and treaties. Protests in the United States, Canada, Mexico, and Europe have threatened to derail all four of the most recent major trade agreements on the table globally: TPP, TTIP, TISA, and CETA, and that was long before Trump walked away from TPP, or threatened to do the same with NAFTA.

The clock is ticking: experts say NAFTA 2.0 negotiations must be concluded before Mexico's upcoming election on July 1st, with a left wing, anti-establishment candidate, Andres Manuel Lopez Obrador, favored to win. The U.S. is also negotiating on borrowed time, with the President's fast track authority for trade negotiations expiring on July 1st. Even if NAFTA 2.0 negotiations can prevail, the new agreement will still need to be ratified by a U.S. Congress, which is facing mid-term elections in November.

A new NAFTA will also need to be ratified by the Canadian House of Commons, and provincial elections will occur this year in New Brunswick, Ontario and Quebec. Currently under NAFTA, the Canadian government is set to potentially pay out at least CDN \$116 million to Tennant Energy, LLC, who claims their wind-farm venture was subject to "unfair treatment" by the Ontario government. Canadian taxpayers are also on the line for an additional CDN \$118.9 million or more in damages to Lone Pine Inc. because the Quebec government passed a fracking moratorium that wound up revoking the company's permit to explore for natural gas and petroleum under the Saint Lawrence River.

Despite all the uncertain odds, and unsettled conflicts, there have been hints so far that the U.S., Canada and Mexico may still be slowly shaping a viable NAFTA 2.0. The Trump administration even made minor concessions leading up to this round of talks, chiefly by dropping the threat to implement tariffs on Mexican and Canadian steel and aluminum imports if the countries agree to a new NAFTA (a logical move given recently imposed U.S. tariffs on Chinese steel and aluminum imports). And there were rumors that some sort of an "agreement in principle" might be revealed at this month's Summit of the Americas in Lima, Peru, which Vice President Pence, Trudeau, and Peña Nieto are all attending, though anonymous sources familiar with the negotiations told Reuters that a deal is unlikely to be made before the end of the month.

No matter how confusing, frustrating or secretive the NAFTA negotiations continue to be, the experts consulted for this story agree that the best, and perhaps only way, to make NAFTA 2.0 environmentally and ethically sound is for the people to get involved in a powerful way: talk directly to your local member of congress or parliament.

"Calls can be avoided, emails deleted in a second," Dr. Howard emphasized. "Nothing beats going and visiting your local representative." A new NAFTA agreement that works for the planet needs to be backed by the voices of the people.

THE CLIMATE CHANGE BATTLE IN PARIS

MEENAKSHI RAMAN*

The Paris Agreement adopted by the 21st Conference of Parties (COP21) under the United Nations Framework Convention on Climate Change (UNFCCC) on 12 December, was the outcome of major battles on a multitude of issues, especially between developed and developing countries.

Developing countries by and large had these negotiating objectives. They wanted to (a) defend the Convention and not let it be changed or subverted; (b) ensure that the Agreement is non-mitigation centric with all issues (including adaptation, loss and damage, finance and technology, besides mitigation) addressed and in a balanced manner; (c) ensure differentiation in all aspects be reflected, with the principles of equity and common but differentiated responsibilities (CBDR) and respective capabilities; (d) ensure that developed countries enhance the provision of finance and technology transfer' (f) ensure that 'loss and damage' is recognized as a separate pillar apart from adaptation and for (g) legally binding provisions, especially on the developed countries.

The United States and allies (especially those under the Umbrella Group) wanted the opposite. They mounted an onslaught on the Convention, seeking to weaken the provisions and their obligations; redefine differentiation so as to blur the different obligations of developed and developing countries; and a legal "hybrid" (in terms of what clauses are and are not legally binding), mainly to suit the US administration's relations with the US Congress which is hostile to the climate change issue.

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COP21 was a battleground that involved an onslaught (with both defensive and offensive interests) of the US and its allies versus the resistance and offensive by the Group of 77 and China, and especially the Like-minded Developing Countries (LMDC) (which includes India) that had comprehensive negotiation positions and a well operating machinery.

A major concern was how the French Presidency of COP 21 would behave, in light of the polarized positions.

Towards the end, an important meeting took place between the LMDC and the French Presidency (who were crafting the final compromise), during the night of Friday, 11 December, where the LMDC presented its “super-redlines”. Among them included that the purpose of the Agreement is to enhance the implementation of the Convention in accordance with the principles and provisions of the Convention; reflection and operationalization of equity and CBDR across all elements; clear differentiation between developed and developing countries on the mitigation efforts; commitment by developed countries on provision of finance, technology transfer and capacity-building with no transfer or extension of obligations to developing countries to provide finance.

The LMDC conveyed the message that with 30 countries in its grouping representing more than 50% of the population of the world and 70% of the poor, it wanted the COP to be a success but that the outcome must be balanced, and not depart from its super-redlines. In the end French took the LMDC points, and got the US to agree.

The COP 21 Presidency was generally viewed as playing a fair and difficult role in securing a delicate and balanced outcome, except for an incident in the final plenary that somewhat marred the process.

This is the ‘should incident’ where the US wanted the word “shall” to be replaced with the word “should” in Article 4.4 of the Agreement that related to the mitigation efforts of Parties. The US wanted developed and developing countries to be treated in a like manner legally, as the original version referred to “shall” for developed countries and “should” for developing countries.” Instead of raising the issue from the floor of the plenary, the US request was accommodated by the COP Presidency by what was termed a “technical correction” and the word “shall” was then replaced with “should” and was read out by the Secretariat. This was viewed with dismay by some LMDC delegations, but as there was no formal objection, the US-inspired amendment stood.

Another incident was when Nicaragua put up its flag in the final session of the Paris Committee that adopted the Paris agreement but it was ignored by the Chair. The Minister of Nicaragua made a strong statement protesting against his being ignored, after the agreement had been passed, to be forwarded to the COP to be adopted.

Highlights of the Paris Agreement

To understand the COP21 outcome, a reflection on the key clauses of the Paris Agreement and the decision that adopted it is important. Below is an initial assessment of the issues that form the context of the clauses, and the final outcome, with an assessment as to whether the views of developed or developing countries (or both) prevailed.

Given that the Agreement is a new legal instrument, it will have to be ratified by Parties for it to come into effect. It will enter into force after at least 55 Parties to the Convention, accounting in total for at least an estimated 55 per cent of the total global greenhouse gas emissions have deposited their instruments of ratification or acceptance. (The Agreement is expected to come into effect post-2020.)

The Agreement (12 pages) was adopted as an annex of a decision (19 pages) of COP21.

Purpose of the Agreement (Article 2)

Article 2 of the Agreement states in sub-paragraph 1 that:

This Agreement, in enhancing the implementation of the Convention, including its objective, aims to strengthen the global response to the threat of climate change, in the context of sustainable development and efforts to eradicate poverty, including by:

- (a) Holding the increase in the global average temperature to well below 2°C above pre-industrial levels and to pursue efforts to limit the temperature increase to 1.5°C above pre-industrial levels, recognizing that this would significantly reduce the risks and impacts of climate change;
- (b) Increasing the ability to adapt to the adverse impacts of climate change and foster climate resilience and low greenhouse gas emissions development, in a manner that does not threaten food production;
- (c) Making finance flows consistent with a pathway towards low greenhouse gas emissions and climate-resilient development.

Sub-paragraph 2 states that “This Agreement will be implemented to reflect equity and the principle of common but differentiated responsibilities and respective capabilities (CBDR-RC), in the light of different national circumstances.”

The purpose of the Agreement was a major area of contention between developed and developing countries.

In the four years of negotiations, the common refrain of developing countries under the G77 and China was for the Agreement not to “rewrite, replace or reinterpret the Convention.” The G77 and China, including its sub-groupings especially the Like-minded Developing Countries (LMDC) and the African Group constantly stressed that the purpose of the Agreement is to enhance the implementation of the Convention on the elements of mitigation, adaptation, finance, technology transfer, capacity-building, and transparency of action and support.

Developed countries, on the other hand, appeared to focus more of their attention on the ‘objective’ of the Agreement, which was perceived by developing countries as a mitigation-centric approach linked only to the temperature goal, with an attempt to weaken the link to the Convention provisions and the obligations of developed countries under the Convention, especially on the means of implementation (finance, technology transfer and capacity-building). Hence, the reference to “enhancing the implementation of the Convention” is seen as a positive win for developing countries.

Although limiting temperature rise well below 2°C goal above pre-industrial levels is clear, reference to the pursuit of efforts to limit the increase to 1.5° C is seen as a major victory for many developing countries, especially the Small Island Developing States, the Least Developed Countries, Africa and the ALBA countries.

Developing countries also wanted the focus to also be on adaptation and finance and to ensure that the global response is in “the context of sustainable development and efforts to eradicate poverty”. Several senior developing country delegates did express their unhappiness over the reference to “finance flows” in the Article 2(1)(c) of the Agreement rather than a reference to the provision of financial resources from developed to developing countries, the commitment language of the Convention.

A major win for developing countries is Article 2.2 that states that the Agreement will be implemented to reflect equity and the principle of CBDR-RC, in the light of different national circumstances.

A key issue throughout the Durban Platform process and at COP21 was whether and how the principle of CBDR-RC will be operationalized in all the elements of the Agreement.

Developed countries had been insisting that the agreement must reflect the “evolving economic and emission trends” of countries in the post-2020 timeframe, while developing countries continued to argue that given the historical emissions of developed countries, developed countries continue to bear the responsibility in taking the lead in emission reductions and in helping developing countries with the provision of finance, technology transfer and capacity-building as provided for under the UNFCCC.

At the COP in Lima in 2014, where the issue of differentiation was also hotly contested, Parties underscored their commitment to reaching an ambitious agreement in Paris that reflects the principle of CBDR-RC, in light of different national circumstances. This was eventually the ‘landing-zone’ arrived at in the Paris Agreement.

Nationally Determined Contributions (NDCs) (Article 3)

Article 3 (previously known as Article 2bis during the negotiations) states that,

As nationally determined contributions to the global response to climate change, all Parties are to undertake and communicate ambitious efforts as defined in Articles 4, 7, 9, 10, 11 and 13 with the view to achieving the purpose of this Agreement as set out in Article 2. The efforts of all Parties will represent a progression over time, while recognizing the need to support developing country Parties for the effective implementation of this Agreement.

Article 3 symbolizes the ‘battle’ over the nature of the agreement to ensure that the NDCs are not viewed only as being ‘mitigation-centric’ (Article 4 refers to the element of ‘mitigation’, Article 7 to ‘adaptation’, Article 9 to ‘finance’, Article 10 to ‘technology development and transfer’, Article 11 to ‘capacity-building’ and Article 13 to a ‘transparency framework for action and support’).

The LMDC was the major proponent for all Parties to regularly prepare, communicate and implement their intended NDCs (INDCs) towards achieving the purpose of the Agreement. It also proposed that INDCs will represent a progression in light of Parties’ differentiated responsibilities and commitments under the Convention.

It was an uphill task during the negotiations to get developed countries to see the viewpoint of the LMDC in this regard. The proposal was to ensure that the contributions of Parties are viewed in a comprehensive manner, reflecting the respective obligations they have under the provisions of the Convention, and not to confine the contributions only to mitigation as desired by the developed countries.

Mitigation (Article 4)

The following sub-paragraphs of Article 4 are among the main highlights in relation to mitigation:

1. In order to achieve the long-term temperature goal set out in Article 2, Parties aim to reach global peaking of GHGs as soon as possible, recognizing that peaking will take longer for developing country Parties, and to undertake rapid reductions thereafter in accordance with best available science, so as to achieve a balance between anthropogenic emissions by sources and removals by sinks of greenhouse gases in the second half of this century, on the basis of equity, and in the context of sustainable development and efforts to eradicate poverty.
2. Each Party shall prepare, communicate and maintain successive NDCs that it intends to achieve. Parties shall pursue domestic mitigation measures, with the aim of achieving the objectives of such contributions.

The US was against any reference that each Party shall implement the NDCs that it has communicated, as this would make it an obligation for the US and others to implement the emissions reduction target communicated. To accommodate the US ‘problem,’ all Parties have to do is to “pursue domestic mitigation measures, with the aim of achieving the objectives of such contributions.” What this means is that there is an obligation to take the measures necessary, with the aim of achieving the emissions reduction target, but not to achieve the target itself (emphasis added).

3. Each Party’s successive NDC will represent a progression beyond the Party’s then current NDC and reflect its highest possible ambition, reflecting its common but differentiated responsibilities and respective capabilities, in the light of different national circumstances.
4. Developed country Parties should continue taking the lead by undertaking economy-wide absolute emission reduction targets. Developing country Parties should continue enhancing their mitigation efforts, and are encouraged to move over time towards economy-wide emission reduction or limitation targets in the light of different national circumstances.

Article 4.4 was another major paragraph of contention between developed and developing countries. Many developing countries wanted the nature of the mitigation efforts to be differentiated between developed and developing countries, reflecting the existing provisions of the Convention that are based on historical responsibility and CBDR.

The US and its allies in the Umbrella Group were opposed to any form of differentiated efforts, preferring that Parties “self-differentiate” among themselves, while recognizing that those who have undertaken absolute emission reduction targets before should continue to do so in the post-2020 timeframe.

While this sub-paragraph continues to provide the policy space for developing countries in undertaking any type of enhanced mitigation efforts (including relative emission reduction targets which are economy-wide and non-economy wide actions), over time, developing countries will have to move to economy-wide targets, in light of their different national circumstances.

The term “over time” is not precisely defined and there is also no reference that developing countries have to undertake “absolute” emission reduction targets, which was what developed countries and some developing countries were pushing for during the negotiations.

Adaptation (Article 7)

In sub-paragraph 1 of Article 7, Parties agreed to

establish the global goal on adaptation of enhancing adaptive capacity, strengthening resilience and reducing vulnerability to climate change, with a view to contributing to

sustainable development and ensuring an adequate adaptation response in the context of the temperature goal referred to in Article 2.

Developing countries had been pushing for a long-term goal or vision on adaptation to ensure that there is parity between adaptation and mitigation and to avoid having only a mitigation centric-goal linked to the temperature goal. This goal also links the adaptation response to the temperature goal.

In relation to the global goal on adaptation, developing countries had during the negotiations proposed “an assessment of the adequacy of support” from developed countries to developing countries as well as the “recognition of increased adaptation needs and associated costs in the light of mitigation efforts...”

What eventually found its way in the adaptation section (in sub-paragraph 14 of Article 7) is the reference to the global stocktake (in Article 14) which states that the stocktake “shall” “review the adequacy and effectiveness of adaptation and support provided for adaptation” as well as “review the overall progress made in achieving progress made in achieving the global goal on adaptation...”

According to sub-paragraph 3, “the adaptation efforts of developing country Parties shall be recognized...”, with the modalities to be developed for such recognition.

Developing countries during the negotiations wanted to ensure that the adaptation efforts they are undertaking with or without international support is recognized as their contribution to climate action.

Loss and Damage (Article 8)

One major victory for developing countries is the recognition of ‘loss and damage’ as a separate article to the Paris Agreement, distinct from ‘adaptation’. Developing countries had been arguing very hard for ‘loss and damage’ to be separately recognized.

(The term ‘loss and damage’ refers broadly to the entire range of damage and permanent loss associated with climate change impacts in developing countries that can no longer be avoided through mitigation nor can be avoided through adaptation.)

The anchoring of ‘loss and damage’ as a distinct article in the Agreement came at a costly price when a deal was made behind closed doors between the US, European Union and some Small Island Developing States and Least Developed Countries in the final hours, prior to the draft agreement being released to Parties for consideration and adoption.

The compromise reached is found in paragraph 52 of the decision text which provides that Parties agree “that Article 8 of the Agreement does not involve or provide a basis for any liability or compensation.”

According to one source, the deal was between the US, EU, and five small island states. It seems that most developing countries were completely unaware of the deal

being done. The deal might have also been linked with getting reference to 1.5°C in the long-term temperature goal in the Paris Agreement in Article 2.1 (a).

According to several experts who have been following the UNFCCC negotiations, the clause in paragraph 52 on exclusion of liability and compensation does not preclude financial resources from being allocated to developing countries seeking funds to address the adverse impacts related to loss and damage.

Finance (Article 9)

Prior to the final outcome in the Paris Agreement, the thrust of the developed countries position on the issue of finance was to increase the scope of countries (to include developing countries) who should be 'donors' of climate finance by proposing terms in the text like 'all Parties in a position to do so' should provide financial resources or that the mobilization of climate finance is a "shared effort" of all Parties.

The key sub-paragraphs on finance which were agreed to are: "1. Developed country Parties shall provide financial resources to assist developing country Parties with respect to both mitigation and adaptation in continuation of their existing obligations under the Convention."

This paragraph continues to ensure that developed countries are not absolved from their existing financial commitments under Articles 4.3 and 4.4 under the UNFCCC. However, the G77 and China had during the negotiations pressed for the provision of these resources to be "new, additional, adequate, predictable, accessible and sustained" but these terms were did not find place in the Agreement, except for a reference in sub-paragraph 4 on "the provision of scaled-up resources" (see below).

Sub-paragraph 2 states that "Other Parties are encouraged to provide or continue to provide such support voluntarily."

Instead of the reference to "all Parties in a position to do so" also having to contribute to climate finance (which was opposed by many developing countries), the above paragraph was agreed to, which stresses the "voluntary" nature of such support.

Sub-paragraph 3 provides that

As part of a global effort, developed country Parties should continue to take the lead in mobilizing climate finance from a wide variety of sources, instruments and channels, noting the significant role of public funds through a variety of actions,... and taking into account the needs and priorities of developing country Parties. Such mobilization of climate finance should represent a progression beyond previous efforts.

Many developing countries including the LMDC preferred the reference to the provision of financial resources by developed countries instead of the focus on the

“mobilization” of climate finance. The Paris Agreement provides for both the provision of support by developed countries and the mobilization of climate finance.

In the earlier version of the draft agreement (version 2 issued on Dec. 10 by the COP 21 President), there was reference that the provision and mobilization of climate finance “shall represent a progression beyond previous efforts from a floor of USD 100 billion per year...” and “towards achieving short-term collective quantified goals for the post-2020 period to be periodically established and reviewed...”.

It is notable that the reference to the USD 100 billion per year as a floor did not make it to the Agreement but is found in paragraph 54 of the COP 21 decision which states as follows:

Also decides that, in accordance with Article 9, paragraph 3, of the Agreement, developed countries intend to continue their existing collective mobilization goal through 2025 in the context of meaningful mitigation actions and transparency on implementation; prior to 2025 the Conference of the Parties serving as the meeting of the Parties to the Paris Agreement shall set a new collective quantified goal from a floor of USD 100 billion per year, taking into account the needs and priorities of developing countries.

In Cancun in 2010, Parties had agreed to developed countries mobilizing USD 100 billion per year by 2020. With the Paris Agreement, a five-year extension has been obtained to reach this target and a new quantified goal will be set for the period after 2025. Senior developing country negotiators also point out that the mobilization of existing climate finance as stated above, is conditional on “meaningful mitigation actions and transparency on implementation”, which was actually previously agreed to under the Copenhagen Accord (in 2009) and later affirmed in the decision in Cancun.

Developed countries, with the US in particular, were against the indication of any quantified target on the scale of resources in the Paris Agreement.

Developing countries, through the G77 and China on the other hand, pressed for clear “pathways to annual expected levels of available resources towards achieving short-term collective quantified goals for the post 2020 period to be periodically established and reviewed” and for “financial resources to be scaled up from a floor of USD 100 billion per year, including a clear burden-sharing formula, and in line with needs and priorities identified by developing country Parties...”.

Technology Transfer (Article 10)

In the negotiations on technology transfer, the LMDC had called for the establishment of a global goal on the transfer of technologies by developed countries and

know-how as well as for the provision of financial resources for collaborative research and development of environmentally sound technologies and enhancing accesses of developing countries to such technologies that match their technology needs.

There was also a proposal from India for developed countries to provide financial resources to address barriers related to intellectual property rights (IPRs) and facilitate access to technologies.

The African Group proposed a technology framework to be adopted that will provide direction and guidance in relation to technology assessments, including in identifying options for enhancing access and to address barriers.

These proposals were opposed by developed countries.

The real value for developing countries is the establishment of the technology framework that includes “the assessment of technologies that are ready for transfer” (as reflected in paragraph 68 of the COP 21 decision).

In addition, there is now a link established between the Technology Mechanism and the Financial Mechanism to allow for collaborative approaches in Research and Development and for facilitating access to technologies, which somewhat reflects the call by India to provide financial resources to address barriers related to IPRs and facilitate access to technologies.

The IPR issue has been a long-standing battle between developed and developing countries under the UNFCCC process, with strong opposition by developed countries led by the US in particular, to even mention the words ‘IPRs’.

Transparency of Action and Support (Article 13)

With a ‘bottom-up’ system in place for countries to nationally determine (not multilaterally determined) their contributions to climate change efforts under the Agreement as advanced primarily by the US, there was a push by developed countries to have a common and unified system in place (which is not differentiated between developed and developing countries) on ‘transparency of action’- which is a ‘top-down’ rules-based system in providing clarity on the content and information regarding those efforts.

Developing countries on the other hand were pressing for a transparency framework which is differentiated between developed and developing countries and better rules on ‘transparency of support’ which relates to information from developed countries on the means of implementation (finance, technology transfer and capacity-building).

The main bone of contention therefore was whether such a transparency framework should be differentiated between developed and developing countries.

What was agreed to is a transparency framework with flexibilities taking into account the different capacities of countries and builds on the existing transparency arrangements (that is currently differentiated between developed and developing countries).

Global Stocktake (Article 14)

During the negotiations, the main issue around the global stocktake was around its purpose and scope. (Stocktake is a 'code' for taking stock of the implementation by Parties collectively of their progress). The idea was for a periodic stocktake of the implementation of the Agreement and there were options as to the purpose of the stocktake: whether to assess the overall/aggregate/collective progress towards achieving the objective of the Convention or the Agreement's long-term goal.

On the scope, for developed countries, the stocktaking was primarily for considering the aggregate effect of the mitigation contributions of Parties in light of the long-term mitigation goal linked to the temperature goal, while for developing countries, it was to consider the overall implementation of obligations of Parties (consistent with the differentiated responsibilities), in relation to mitigation, adaptation and the means of implementation.

Under the Agreement, the global stocktake, which will be conducted every 5 years, is to be comprehensive, considering mitigation, adaptation and the means of implementation and support, and undertaken in the light of both equity and the best available science. This will avoid a mitigation-centric process which also takes into account considerations of equity. Thus the developing countries' viewpoints prevailed in this clause.

In a related matter, in the COP 21 decision under the section on intended nationally determined contributions (INDCs), paragraph 17 notes with concern

that the estimated aggregate greenhouse gas emission levels in 2025 and 2030 resulting from the INDCs do not fall within least-cost 2 °C scenarios but rather lead to a projected level of 55 gigatons in 2030, and also notes that much greater emission reduction efforts will be required than those associated with the INDCs in order to hold the increase in the global average temperature to below 2 °C above pre-industrial levels by reducing emissions to 40 gigatons or to 1.5 °C above pre-industrial levels by reducing to a level to be identified in the special report referred to in paragraph 21 below.

In paragraph 20, Parties agreed that a facilitative dialogue among Parties will be convened in 2018:

to take stock of the collective efforts of Parties in relation to progress towards the long-term goal referred to Article 4(1) of the Agreement [which relates to the long-term temperature goal and the mitigation goal) and to inform the preparation of nationally determined contributions (NDCs) pursuant to Article 4, paragraph 8, of the Agreement (which relates to the communication of the NDCs).

The “facilitative dialogue” above appears to be an ex-ante process to inform the preparation of the NDCs, and is only about mitigation, unlike the global stocktake.

The EU has been a major proponent of a review process every five years to assess if Parties’ mitigation contributions are on track in meeting the long-term mitigation goal and for enhancing (or ratcheting up) the contributions of Parties accordingly.

Many developing countries, especially from the LMDC, were worried about such a ratcheting up process due to concerns that with developed countries not doing their fair share of the effort (taking into account their historical emissions), the pressure would be on developing countries to plug the emissions gap to limit the temperature rise. Due to this concern, they had been opposed to any ex-ante process to review the INDCs prior to their communication by Parties. Clearly, the EU has got its way, against the concerns of the LMDC.

Conclusion

The developing countries started the Paris talks with some clear objectives and principles. Though some aspects were diluted, it got its red lines protected, though it did not get some of its offensive points accepted (for example, clearer targets on finance or a reference to IPRs as a barrier to technology transfer). Some of the important points gained by developing countries was that:

- The Paris agreement is not mitigation-centric as desired by developed countries, although in some aspects mitigation does get pride of place;
- The developing countries to a significant extent successfully defended the Convention and stopped the plans of developed countries to drastically re-write the Convention.
- Differentiation between developed and developing countries was retained in the main, although weakened in some areas.
- The principles of equity and CBDR were mentioned in a specific clause in the important Article 2 on purpose of the Agreement, and operationalized in some key areas of the Agreement.
- Sustainable development and poverty eradication as important objectives of developing countries were referred to as the context of actions by developing countries in some key areas.
- Developed countries should take the lead in mitigation and finance is referred to in the agreement.
- Although the temperature goal is to limit temperature rise to well below 2 degrees C from pre-industrial levels, the reference to pursuing efforts to limit temperature rise to below 1.5 degree C (this 1.5 degree as the target was called for by small island states, LDCs, Africa and ALBA countries) is significant.

True, the Paris Agreement also means that big pressures will be put on developing countries, and especially the emerging economies, to do much more on their climate actions, including mitigation. But these enhanced actions need to be taken, given the crisis of climate change that very seriously affect developing countries themselves.

The Agreement also fails to provide actions that fulfil the 2 degree Celsius pathway, let alone 1.5 degrees. The emissions gap between what countries in aggregate should do and what they pledged to do in their INDCs up to 2030 is very large. This has led many commentators to condemn the Paris COP21 as a failure.

However, another perspective is that COP21 is only a start, and the Agreement represents an agreement internationally to enhance individual and collective actions to face the climate catastrophe. A real failure would have been a collapse of the Paris negotiations, Copenhagen-style, or an outcome that only favors the developed countries with the rewriting of the Convention.

The Agreement, from this perspective, has laid the foundation on which future actions can be motivated and incentivized, a baseline from which more ambitious actions must flow. There are mechanisms in place in the Paris agreement, such as the global stocktake, that can be used to encourage countries to raise their ambition level.

International cooperation, however inadequate and flawed, remains intact from which much more cooperation can flow in future.

The outcome represented by the Paris Agreement, that a bottom-up approach is taken on enabling each country to choose its “nationally determined contribution” with presently very weak or even no compliance, was the only possibility, given the state of many governments (including the United States) generally not being ready or willing or able to undertake legally binding targets.

It can be expected that developed countries will pile pressure on developing countries, especially emerging economies, and also try to shift or avoid their obligations. For the developing countries, they should invoke the overall context of what will make a low carbon pathway a reality—finance, technology transfer, capacity building plus adaptation, loss and damage, all in context of sustainable development and poverty eradication. They must also remain firm and united in the negotiations and other processes ahead, starting from now, even before the signing and ratification of the Agreement.

CLIMATE CHANGE AFTER PARIS: FROM TURNING POINT TO TRANSFORMATION

RICHARD KINLEY*

[Editors' note: Kinley served as Deputy Executive Secretary of the UN Framework Convention on Climate Change (UNFCCC) from 2006 to 2017. He supervised the UNFCCC secretariat's support for the Paris Agreement negotiations.]

The twenty-first Conference of the Parties¹ to the United Nations Framework Convention on Climate Change (UNFCCC) in Paris—COP 21—is recognized as the most successful climate change conference ever. A record-breaking 28,000 participants entered the premises at Le Bourget² over the two weeks of the event; they were well taken care of and enjoyed very smooth logistics. Even more significantly, the first day of the conference saw the largest ever number of heads of state and governments together under one roof on one day and all who wished to speak could do so, providing a huge political push for success.³ A vast array of side events and announcements provided ample demonstration of the momentum and engagement towards climate solutions.

There was a remarkable spirit of cooperation and a determination among governments to reach agreement, enabled by outstanding diplomacy by the Presidency under the leadership of Laurent Fabius, France's then Minister of Foreign Affairs and International Development. The crowning achievement was the adoption of

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the Paris Agreement and its related decisions (UNFCCC, 2015a), which constitute a turning point in global efforts to deal with the climate change problem and chart a new course to a low-carbon, climate-resilient future.

The phenomenon that was COP 21 constitutes a ground-breaking outcome. Notwithstanding some dissenting voices, the adjectives that have flowed since the 12 December 2015 reflect the widespread euphoria of the moment and are markedly different from all COPs since Kyoto in 1997: ‘historic’, ‘ambitious’, ‘monumental triumph’, ‘landmark’ (BBC, 2015; New York Times, 2015; UN News Centre, 2015). And for the first time in history, the results of a COP actually exceeded the expectations of virtually all forecasts. Among the many achievements of the Paris meeting, there are perhaps eight that stand out:

1. Climate change mitigation is now firmly founded on national action; the orientation has shifted from a perceived top-down one, à la Kyoto Protocol, to one with a strong bottom-up component based on national undertakings. The submission before Paris of Intended Nationally Determined Contributions (INDCs)—now set to become NDCs—in numbers that no one ever contemplated⁴ affirms this new reality. Importantly, these INDCs go beyond mitigation, also covering adaptation, finance and other issues, thus reflecting more fully the broader realities involved in acting on climate change.
2. The global goal of limiting temperature change to below 2°C compared with pre-industrial times had been agreed five years ago. In Paris, governments enshrined this in a legal treaty and went further by agreeing to ‘pursue efforts’ (UNFCCC, 2015a, Article 12.1a) to limit the increase to 1.5°C. This constitutes an important statement of solidarity with vulnerable countries; it may be an aspirational goal, but aspirations create expectations and are thus extremely important in politics.
3. The inclusion of a more popularly understandable long-term goal, alongside the below 2°C global temperature goal, was the most significant achievement. The inclusion in a legal Agreement of the concepts of global peaking of emissions and a balance between global emissions and removals (in other words, zero net emissions) means that the policy certainty that the business sector has been seeking has been provided. Although the timelines are somewhat open, the signal is clear that the era of fossil fuels is ending. Real transformation of the energy sector is the will, and undertaking, of all of the world’s governments, including fossil-fuel exporters.
4. Linked to the long-term goal, the agreement on a process of global stock-taking every five years ‘in the light of equity and best available science’ (UNFCCC, 2015a, Article 14.1) will systemize moving to more ambitious action. Again, the direction is clear, with an expectation of

continuous improvement (no backsliding). There is a new stability in the international process. It is also significant that this stock-taking will apply not only to mitigation, but also adaptation, as well as means to of implementation and support for developing countries.

5. The international architecture has shifted from a situation of strong differentiation between industrialized and developing countries to one that is much more nuanced. These nuances were possible because governments realized that enhanced action by all was needed. Differentiation is still woven systematically throughout the Agreement (and in extremely astute ways), while the era of a single, universal system—common commitments with flexibility, reflecting national realities—is also launched. Central to this success is the significantly enhanced attention to the need for support to developing countries to enable them to do more. There is a common direction of travel, but industrialized countries must lead the way.
6. Adaptation has come into its own. One could debate whether parity with mitigation has been achieved, but adaptation is now a pillar of the international climate change regime. Loss and damage was also granted its own article in the Agreement, responding to a key demand of the most vulnerable countries.
7. The issue of finance—or means of implementation—was, as expected, hotly contested and longstanding tensions remain. However, a deal was struck, to the relief of many. The US\$ 100 billion financing goal from the 2009 Copenhagen Conference (COP 15) remains in place and will be enhanced from 2025, but without a defined pathway to its achievement. More noteworthy are three new developments:
 - Significantly enhanced attention to the reporting and assessment of support to developing countries both as part of the transparency system and as fundamental conditions of the success of the Agreement
 - Recognition (for the first time) of the possibility of developing countries providing such support (while reaffirming developed countries' existing financial obligations)
 - A surprisingly robust outcome on capacity building to enable developing countries to fulfill their undertakings
8. Market approaches found their way into the Paris Agreement, giving them a renewed role in international efforts to combat climate change. For many, this was another surprise that emerged from COP 21. Article 6 speaks of 'internationally transferred mitigation outcomes' to achieve NDCs and establishes a new 'mechanism' to contribute to mitigation and support sustainable development; the details must now be worked

out. These market approaches are accompanied by a ‘framework for non-market approaches to sustainable development’ (UNFCCC, 2015a, Article 6.9) whose details will now also be developed.

And on the sidelines of COP 21 hugely important development initiatives were announced, including those on renewables for Africa (UNFCCC news, 2015b), solar energy (UNFCCC news, 2015a) and billions in additional contributions (UNFCCC news, 2016) earmarked for important small funds⁵, to mention a few examples.

Alongside the Paris Agreement, it is important to highlight another paradigm shift. Over the past two years the world has experienced an exponential growth in climate action by cities, regions, businesses and civil society, in addition to national actions.⁶ On the one hand, this reality was inspired by the ambitions for Paris and mobilization for the global extravaganza that was COP 21; on the other hand it was also an enabler of the ambitious outcomes of the Paris meeting.

The scope and scale of the initiatives and announcements during COP 21, some at the highest level, are spectacular.⁷ With the adoption of the Paris Agreement, and the directional signal provided by the long-term goal, we can now look forward to this trend accelerating through a new sustainable growth model that is becoming a virtuous circle of action. Although it is true that the profile of non-state actors in the Paris Agreement was lower than many had hoped for⁸, they are increasingly becoming the engine of both mitigation and adaptation action. This is helping to define a ‘new normal’. For example, actions by investors are driving a new economy (e.g. a record US\$ 330 billion in new clean-energy investment in 2015; Bloomberg, 2016). Similarly, divestment initiatives (with managers of US\$3.4 trillion in assets acting) and the closing of coal-fired power plants (DivestInvest, 2016) are changing the energy paradigm. The rapidly declining price of renewable energy⁹ and the explosion of mega-sized solar and wind power installations¹⁰ are game changing realities. These are but a few examples of a much wider range of mobilization and engagement initiatives.

One cannot consider the results of COP 21 without addressing questions relating to the process and procedure. Who can remember a smoother COP, with so few procedural disputes? To what can one ascribe this success, verging (in this author’s opinion) on miraculous? There are several reasons, founded on the desire of governments to reach an agreement. The importance of the presence of heads of state and governments on the first day, and their resounding calls for agreement and ambition, cannot be overstated. It was very helpful to have a clear and agreed timetable from the outset—especially when the preparatory Ad Hoc Group on the Durban Platform (ADP)¹¹ would close—followed by an efficient transition to French leadership. Mindful of problems experienced by the Danish Presidency of the Copenhagen COP in 2009, the COP President was particularly clear on his intentions regarding negotiating texts. First that there was no ‘French text’ (and there really

was none), but only text derived from Party consultations. The final text emerged in three pre-announced iterations, carefully and often elegantly constructed with—as Fabius promised—‘no surprises’. One can only hope that this experience will put to rest the idea that governments can actually negotiate intricate climate change agreements line by line amongst themselves; negotiation through the Chair’s iterations is surely the only viable option for such highly complex discussions as those in Paris. The French presidency was very transparent, consulting all groups (not just the powerful), not imposing its own ideas, working closely with Peru (the hosts of COP 20 the previous year) as a partner, enlisting the support of key negotiators in their team and truly listening to what Parties were saying.

There are many reasons why the COP 21 achieved what it did; four stand out as the main contributors.

First, underlying economic realities such as the spread of renewable energy noted above have shifted to the point where real change towards a lower-carbon world is now possible.

Second, there was a strong, almost palpable, determination by all governments—evident even on the first day—to have an agreement. Ample opportunities to block were not exercised; ‘red lines’ changed to ‘green lines’ and a spirit of compromise really did prevail. Strong leadership (not least within the G-77 and China) and flexibility were demonstrated by all of the key players on issues such as adaptation, loss and damage, differentiation and finance. And the leaders of the most powerful, as well as the most vulnerable, countries were personally involved in COP 21 or active behind the scenes.

Third, it is worth reiterating the role played by France (the host country), driven by the COP President, Laurent Fabius—the hospitality, the astute political leadership and effective diplomacy over many months, the listening, the honest-broker role, the willingness to push the envelope and insert ambitious, nuanced language into the Agreement. All of these factors enabled everyone to come away feeling that they had won something.

Fourth, perhaps the most fundamental enabler of the success of Paris was the realization that all must participate in solving the huge global challenge posed by climate change. The seriousness and urgency of the problem demanded nothing less, and the Paris Agreement was only possible because of the contribution of numerous actors in the run-up to COP 21 and at the conference itself.

So, the game has changed, but is it in the bag and problem solved? Here one has to shift from euphoria to somber assessment. In real terms, the game is actually only just beginning. To some extent, Paris has been deemed such a success precisely because progress in the negotiations since Kyoto has been so slow and so hard won. As Bill McKibben (of 350.org fame) has said: ‘the most compelling thing you can say about Paris is not that it saved the planet, but that it saved the chance of saving the planet’ (Hood, 2016). We must beware of complacency, and actually need to be

concerned that momentum is maintained and not lost. The task ahead is huge, in many ways.

The INDCs, although quasi-universal, are inadequate to the task. They are projected to get the world to somewhere near 3°C of warming (UNEP, 2015; UNFCCC, 2015b). Although this is a major shift of the trajectory of emissions, these INDCs need to be exceeded and strengthened, without waiting for the stock-taking in 2023, or even the ‘facilitative dialogue’ planned for 2018.

Global emissions are still rising. The impacts of climate change are going to increase in frequency and magnitude. The Agreement calls for global peaking as soon as possible; and this must come in the next 5–10 years.

The intergovernmental process has a huge task ahead in fulfilling the mandates in the Agreement and the COP decision—developing modalities and rules, getting institutions off the ground or shifted into a higher gear and putting the transparency regime in place. The effort begins with encouraging prompt ratification by governments, to ensure that the Agreement enters into force quickly.

The promise of enhanced support for developing countries has to be fulfilled or much of the Agreement’s promise will be lost. Such support will be crucial to implementing and strengthening the NDCs, to meeting the transparency requirements and to formulating low-emission development plans.

Christiana Figueres, Executive Secretary to the UNFCCC, said recently that getting 196 governments to agree in Paris was the easy part. Moving from words to action, transforming the global economy, rapidly accelerating action: these are the imperatives of the post-Paris world and the hallmarks of the new climate change game that demand concerted action by national and sub-national governments, business, civil society, international organizations and citizens alike. The Paris Agreement provides the directional signal but it is through its implementation, through the impact on the atmosphere and on peoples and economies, that its ultimate success will be judged. And in this endeavor, time is of the essence.

NOTES

1. Officially also the eleventh session of the Conference of the Parties serving as the meeting of the Parties to the Kyoto Protocol.

2. 17,150 Party delegates, 6,300 NGO delegates, 1,025 delegates from intergovernmental organizations, 900 from United Nations organizations and 2,750 press.

3. 78 Presidents and 48 Prime Ministers attended the Leaders Event and delivered speeches and a further 7 Presidents and 7 Prime Ministers attended without speaking. For the full list of speakers, see <http://newsroom.unfccc.int/cop21parisinformationhub/cop-21cmp-11-information-hub-leaders-and-highlevel-segment/>

4. 156 INDCs were received before the start of the Conference from 184 Parties (the European Union submissions cover 28 member states and the EU).

5. The announcement of albeit modest amounts (in comparison with the negotiations over billions and trillions) for the Adaptation Fund (US\$ 75 million) and the Least Developed Countries Fund (US\$ 248 million) had significant political impact because these Funds are particularly important for the most vulnerable countries and are relatively easy to access. This contributed to the overall positive mood on finance despite other objectives not being achieved.

6. See for example the NAZCA Portal (<http://climateaction.unfccc.int>), which registers commitments to climate action by companies, cities, sub-national regions and investors to address climate change.

7. US President Barack Obama's Mission Innovation, Indian Prime Minister Narendra Modi's Solar Alliance, Bill Gates' Clean Tech Initiative, the Friends of Fossil Fuel Subsidy Reform and the World Bank-International Monetary Fund's global Carbon Pricing initiative are the highest profile examples. See Northrop (2016) for an unofficial listing of related announcements.

8. The Agreement's Preamble "recognize[es] the importance of the engagements of all levels of government and various actors, in accordance with respective national legislations of Parties, in addressing climate change". Otherwise, references to action by "non-Party stakeholders" is relegated to the accompanying decision (UNFCCC 2015a, paras 116–121).

9. Solar energy has dropped 80% in cost since 2008 and the cost of wind has dropped by 40% (IRENA, 2014, pp. 14–15).

10. See NPR (2016) on Morocco's new concentrated solar power plant, set to be the world's largest.

11. The ADP had been the forum for the negotiations leading up to Paris since the mandate that launched the negotiation process at COP 17 in Durban in 2011.

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THIS CHANGES NOTHING: THE PARIS AGREEMENT TO IGNORE REALITY

CLIVE L. SPASH*

Calls for more research, evidence and proof have delayed action on human-induced climate change for over a quarter of a century. In order to stop climate forcing, fossil fuel emissions must be severely curtailed, if not virtually ceased, and this must be done before greenhouse gases (GHGs) accumulate in the upper atmosphere. Everyone who takes the issue seriously understands this and knows the techno-optimists advocating some future miracle solution (e.g. geoengineering, carbon capture and storage) are primarily concerned with maintaining business as usual regardless of human-induced climate change or any other environmental problem. The Paris Agreement is being hailed as a long overdue counter to this, but is it?

Failure to take action to date means atmospheric concentrations of GHGs have already exceeded the level expected to produce climate forcing of 2°C,¹ which supposedly the international community was committed to prevent happening. Even the Secretariat of the United Nations Framework Convention on Climate Change (UNFCCC) has stated that, if implemented, their plans for the 2°C target (i.e. stabilization at 450 ppm CO₂ equivalent) are only meant to offer a 50:50 chance of avoiding the worst effects of climate change.² The 2°C target itself has been controversial, does not avoid the threat of significant harm and as such is not in accord with the requirements of the UNFCCC. The ultimate aim of the UNFCCC was meant to be the 'stabilization of GHG concentrations in the atmosphere at a level that would prevent dangerous anthropogenic interference with the climate system' (Article 2), not the implementation of a policy offering a 50:50 chance of suffering the worst impacts.

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The Paris Agreement now claims (Article 2) that the aim is to hold global average temperature increases 'to well below 2°C' and 'pursue efforts' to limit this to 1.5°C, in order to reduce the risk and impacts from climate change. Many are emphasizing the mention of 1.5°C as a great success, but there are no plans to achieve this. There are also no mentions of the 50:50 chance being over, so now the world is headed towards an increasingly certain temperature rise well above 2°C. Rather than a set of planned and coordinated reductions, which would have targeted fossil fuel combustion and those responsible for creating GHGs, the Paris Agreement has 'intended nationally determined contributions'. These intentions 'are more in line with a total warming of 3°C' (*The Economist*, 12 December 2015). Yet, many are still applauding because this failure to be anywhere near on target is actually admitted in the Agreement.

In fact, the Paris Agreement fully expects substantive impacts from human-induced climate change and has given up on avoiding all of them. This is evident in the provisions being made for adaptation. However, responsibility for forcing others to adapt is not something mentioned, and liability and compensation are explicitly excluded (Clause 52, qualifying Article 8). So the Paris Agreement maintains the prospect of dangerous anthropogenic interference with the climate system, deliberate harm of the innocent and enforced adaptation. Indeed, in contradiction of the UNFCCC's own remit, it confirms the conversion of the international position from prevention to risk management. In Article 8, you can find the promotion of 'Comprehensive risk assessment and management' and 'Risk insurance facilities, climate risk pooling and other insurance solutions'. As if fire insurance ever stopped a fire!

In addition, the whole of Article 2 is qualified by the phrase: 'in the context of sustainable development and efforts to eradicate poverty'. Sustainable development is repeatedly emphasized in the Paris Agreement, occurring 12 times in the first 10 articles. Indeed, the Agreement cannot be read outside of the context of effective corporate business lobbying and the new agenda for growth under the guise of 'sustainable development'. The very opening statements of the document emphasize the importance of the October 2015 UN Resolution A/RES/70/1 'Transforming our world: The 2030 Agenda for Sustainable Development', which itself promotes economic growth, technology, industrialization and energy use. The specified target of Goal 8 of this UN Resolution is to sustain per capita economic growth at a rate of 'at least 7 per cent gross domestic product per annum in the least developed countries'. The environmental devastation this would entail is meant to be addressed by the 'endeavor to decouple economic growth from environmental degradation', which is meaningless unless undertaken in absolute terms and that is simply impossible for the industrial economy being promoted in Goal 9. Yet, hoping for technological miracles fits well with faith in a never-ending economic expansion of material and energy throughput.

The Paris Agreement follows suit and claims that: 'Accelerating, encouraging and enabling innovation is critical for an effective, long-term global response to climate change and promoting economic growth and sustainable development' (Article 10). In fact, addressing climate change does not require new technology which, even when successful, takes decades to move from invention to innovation to implementation. That time frame is a luxury that has already been squandered by decades of inaction and fossil fuel expansion. The reduction of GHGs is necessary immediately using existing appropriate (not high) technology, changing infrastructure, systemic transformation and control of demand.

Therein lies the problem with the Paris Agreement; it is a fantasy which lacks any actual plan of how to achieve the targets for emissions reductions. There are no mentions of GHG sources, not a single comment on fossil fuel use, nothing about how to stop the expansion of fracking, shale oil or explorations for oil and gas in the Arctic and Antarctic. Similarly, there are no means for enforcement. Article 15 on implementation and compliance establishes an expert committee that will be 'non-adversarial and non-punitive', which means that it has no teeth and can do nothing about non-compliance. Then, there is Article 28, which offers the withdrawal option without any sanctions. Everyone seems to have already conveniently forgotten how Canada backed out of the Kyoto Protocol in order to frack on a massive and environmentally catastrophic industrial scale.

What is the point of trusting the governments who sign up to this agreement with one hand while investing ever more in fossil fuel extraction, combustion and consumption with the other? These are the same governments who know the world already has proven fossil fuel reserves that exceed the amount that can be combusted by at least three times,³ for an even chance of achieving 2°C, but continue exploring for more. They are the same governments promoting 7 per cent growth rates and the proliferation of industrialization and modern energy infrastructure including advanced fossil fuel technology (UN Resolution A/RES/70/1). So, they give us promises of 1.5°C while constructing infrastructure and supporting production processes requiring massive fossil fuel expansion in an economic system built on mass conspicuous consumption and a throwaway fashion culture.

The divorce of economic and energy policy from the targets of Article 2 can only be seen as either total cynicism or total delusion on the part of the negotiators applauding in Paris. Perhaps they are all highly trained in the Orwellian art of doublethink. In any case, the aspirational targets bear no relationship at all to the reality of what governments, and their business partners, are actually doing today,⁴ or the other treaties the same governments are simultaneously signing. The economic system is already committed to continue exploiting resources as fast as possible in the race for ever-increasing material and energy throughput. Just look at the European Community's Horizon 20:20 goals and their promotion of growth and competition and the ongoing push for the Transatlantic Trade and Investment Partnership.

Apparently, economic growth is the priority to be protected and promoted above all else.

The contradiction at the heart of the Paris Agreement is actually unsurprising because the powerful lobbying for growth as the solution to climate change has for some time been orchestrated by corporate business and financiers using the rhetoric of a green economy. As I have noted elsewhere (Spash, 2014), this has involved the combination of arguments for growth alleviating poverty with the necessity of environmental risk management, and 'green' technology promoted through trillions of dollars being directed towards 'entrepreneurs' (i.e. multinational corporations), to create a 'new economy'. Technology and innovation are key to this position with its neo-Austrian economics and 'free market' rhetoric. Climate change policy must be crafted accordingly to serve the capital accumulating growth economy, and so the latter becomes the solution to (not the cause of) the former.

Unfortunately, many environmental non-governmental organizations have bought into this illogical reasoning and justify their support as being pragmatic. Neoliberal language is rife across their reports and policy recommendations and their adoption of natural capital, ecosystems services, offsetting and market trading. These new environmental pragmatists believe, without justification, that the financialization of Nature will help prevent its destruction. Thus, environmentalists promote carbon emissions trading but pay little attention to its dangers and failures (Spash, 2010). For example, Nat Keohane of the Environmental Defense Fund has noted on their website how they pushed in the corridors of Paris for 'an opening for markets'. The right-wing government of New Zealand, leading an 18-country lobby, also had its negotiators pushing for the same international carbon markets. However, you will not find emissions trading, markets, cap and trade or offsets, mentioned in the doublespeak of the Agreement, but rather the term 'internationally transferred mitigation outcomes' (clause 108 and Article 6), something Keohane applauds.

Doublespeak and wording that is strategically ambiguous is the high point of international diplomacy in the Paris Agreement. This is what made the Agreement possible and why it is so meaningless. Do not look for the words oil, natural gas, coal or fracking because they do not merit even one single mention. Nor indeed is there anything about addressing the sources of human GHG emissions, or the structures that promote them. Consider something as fundamental as energy use. The one sentence that mentions energy appears in the preamble and merely acknowledges the need to promote 'sustainable energy in developing countries, in particular in Africa'.

What the Paris Agreement tells is a bizarrely unreal story. Apparently, the cause of climate change is not fossil fuel combustion or energy sources but inadequate technology and the solution is sustainable development (i.e. economic growth and industrialization) and poverty alleviation. As far as the current production and consumption systems are concerned, little needs to change. There are no elites

consuming the vast majority of the world's resources, no multinational corporations or fossil fuel industry needing to be controlled, no capital accumulating competitive systems promoting trade and fighting over resources and emitting vast amounts of GHGs through military expenditure and wars, and no governments expanding fossil fuel use and dependency.

The unreality of this document is only matched by the unreality of the praise given to it by the media and others. This is a sign of how much strategic ambiguity and doublespeak have now become an accepted way for international politics to be conducted and reported. People can even applaud stating that the whole UNFCCC has failed for over 20 years and the planet is headed well beyond 2°C. The rhetorical flourish of successful agreement is meant to hide a total lack of substance. The Paris Agreement is at heart a document that consists of independent unilateral unenforceable targets but is being sold as a multi-lateral consensus with firm commitments.

In the final analysis, a simple test of the effectiveness of the Paris Agreement would have been a dramatic drop in the share price of the fossil fuel industry, which is loaded with toxic assets. That is, a serious agreement would have written-off all the fossil fuel reserves that cannot be burnt without heading way beyond the already exceed 2°C target. This would have revealed the financial balance sheets that are bankrupt. Nothing happened to the stock market because the Paris Agreement is perceived by the fossil fuel industry, and financial markets, as no threat to business as usual, and possibly it is even a great opportunity for new financial instruments and ongoing economic exploitation of the planet, with trillions to come to the energy industry in subsidies for innovation and technology development.

In reality, the Paris Agreement is a compilation of nationally determined intended contradictions. The UNFCCC Secretariat advanced no plan of action and its latest Agreement is totally divorced from the operations of the current economic and political systems. Human-induced climate change can now conveniently slip off the political and media agenda until the time comes for the next major cop-out due in 2023 when a 'stock-taking' exercise is scheduled. By then few, if any, of the politicians responsible for this farce are likely to be in office, and neither they nor the bureaucrats and negotiators who have celebrated this great success will ever be held accountable. An acceleration of climate change impacts seems to be the only thing that will now alter the complacency of the global community.

NOTES

1. The 2°C target for global warming is associated by the UNFCCC with stabilizing GHGs at 450 part per million (ppm) CO₂ equivalent. Their website's facts page states this, but then misleadingly reports the current CO₂ alone (not equivalent) level as currently 398.58 parts per million. As of 2012, the total radiative forcing by all long-lived GHGs already in the

atmosphere corresponded to a CO₂ equivalent concentration of 475.6 parts per million (World Meteorological Organisation reported on their website [http://www.wmo.int/pages/mediacentre/press_releases/pr_980_en.html]; accessed 3 May 2015). The National Oceanic and Atmospheric Administration concurs with this, reporting the atmospheric concentrations in CO₂ equivalents as of 2014 to be 481 ppm, of which 397 is stated to be CO₂ alone (<http://www.esrl.noaa.gov/gmd/aggi/>; accessed 21 January 2016). The level of CO₂ alone was reported by the World Meteorological Organisation as first surpassing 400ppm in the atmosphere in 2012 (Howard, 2014). Concentrations are rising at approximately 3 ppm per year.

2. 'A 2 degrees Celsius/Centigrade rise in global temperatures from pre-industrial levels is the highest rise we can afford if we want a 50% chance of avoiding the worst effects of climate change' (UNFCCC [http://unfccc.int/essential_background/basic_facts_figures/items/6246.php]; accessed 8 January 2016). Note that this statement conflates the probability of achieving 2°C with the probability of the worst effects, that is, even achieving 2°C with certainty leaves uncertain the impacts that temperature entails.

3. The excess of three times is based upon large conservative estimates of the available remaining budget, namely 1400 Gt of CO₂, under a 50% chance of achieving 2°C (Raupach et al., 2014, p. 874). IPCC (2013) calculations are much lower, but even these have been criticized as neither up-to-date (referencing 2011) nor adequately taking into account non-energy emissions which reduce the amount left for fossil fuels. Doing so leads Anderson (2015) to estimate the remaining budget for energy emissions over the period 2015–2100, at about 650 Gt of CO₂ for a 'likely' (66%) chance of staying below 2°C. On this basis, the excess of reserves is over 6 times the available budget. Going down to 1.5°C and/or increasing the chance of achieving the target increase(s) the excess even further.

4. The commitments already made to exploiting new fossil fuel sources by 2012 were estimated as leading to the release of 300 Gt CO₂ equivalent between 2012 and 2050 (Meindertsma & Blok, 2012). This is being added to the existing excess of unburnable stocks for the 2°C target (McGlade & Ekins, 2015); see also previous note.

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PART FOUR

THE SUSTAINABILITY DEBATE



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EFFECTIVE RESPONSES TO GLOBAL ENVIRONMENTAL PROBLEMS DEMAND BOTH international cooperation and the reform of global institutions. As previous sections have indicated, these are substantial challenges. The prevailing structures and practices of the international system make attainment of these goals difficult. They cannot be divorced from the larger political, economic, and cultural struggles that infuse world politics.

It would be a mistake, however, to study global environmental politics solely in terms of international treaties and institutional change. Actors' perspectives on the essence of the global environmental problematique are another key variable, and one that has changed in important ways over time. Few would argue that ideas alone have the power to change history. But there is no doubt that paradigms—bundles of fundamental ideas and beliefs—shape the strategies and goals of actors in important ways. They influence how actors understand their interests, how policies are formulated, how resources are allocated, and which actors and institutions are empowered to make the critical decisions that affect global environmental quality.¹

One powerful but controversial paradigm that emerged in the buildup to the 1992 Rio de Janeiro Earth Summit is the idea of sustainability. As discussed in Part One, a central controversy at the 1972 Stockholm conference was the debate over whether economic development is inherently destructive to the environment. This question revealed sharp cleavages between governments of the industrialized North and the developing South, as well as sharp divisions between growth-oriented governments in general and nongovernmental actors concerned about the negative consequences of continually expanding economic activity.

The concept of “sustainable” economic development is appealing because it holds the promise of reconciling these divergent views. Sustainable development is based on the premises that poverty and economic stagnation are themselves environmentally destructive, and that some forms of economic organization and activity can reduce environmental impact even as they promote growth and human development. In other words, while some forms of economic growth are clearly environmentally destructive, sustainability is rooted in the fact that not all growth trajectories are equal in their impacts. If these premises are true, then it might be possible to design environmentally friendly forms of production and exchange that simultaneously facilitate economic development, alleviate the pressures of poverty, and minimize environmental damage. Such efforts might seek “development without growth”—that is, improvement in the quality of people's lives without an increase in the aggregate level

of economic activity.² Or they might be tailored to forms of economic growth that are more acceptable ecologically. Whatever the specific path advocated, reconciling the historical tension between ecology and economy is the central goal of sustainability.

The most frequently cited definition of sustainable development is found in *Our Common Future*, the influential 1987 report published by the World Commission on Environment and Development. In 1983 the United Nations General Assembly charged the commission—also known as the Brundtland Commission, after its chairperson, Norwegian prime minister Gro Harlem Brundtland—with devising a conceptual and practical “global agenda for change.”³ The commission, which included representatives from 22 nations on five continents, conducted a series of hearings around the world before preparing its final report and presenting it to the General Assembly in 1987. The report had an enormous influence on the global environmental debate and played a key role in shaping the content and format of the 1992 Rio Earth Summit.

According to the Brundtland Commission, sustainable development is “development that meets the needs of the present without compromising the ability of future generations to meet their own needs.”⁴ To meet the goal of achieving sustainable development, the commission set forth a policy blueprint based on enhanced international cooperation, substantial changes in national policies, and a reoriented global economy. The report argues that the problem is not economic growth per se but the environmentally destructive character of many current activities and incentives. Indeed, they argued that strong economic growth remained vital given the substantial environmental impacts of widespread global poverty. Thus, the commission combined its recommendations for ecologically sound forms of production and exchange with a call for renewed global economic growth to solve the problems of global poverty, and for more equitable global regimes governing international trade, investment, and technology transfer.

There are many different conceptions of sustainability and sustainable development. Some influential actors and institutions have preferred the Brundtland Commission’s notion of growth-oriented sustainability, emphasizing efficiency in the context of open markets to improve existing systemic structures such as free trade and a modern industrial economy. This perspective takes an optimistic view of the possibilities for “ecological modernization,” in which advanced industrial societies are seen as able to make significant environmental progress through reform in production systems, management practices, and market-based incentives, while remaining within the parameters of a globalizing capitalist economy.⁵ Reflecting this vision, the World Business Council for Sustainable Development (WBCSD) emerged in the run-up to the 1992 Rio Earth Summit to offer a “business point of view” on global environmental challenges.⁶ Today, WBCSD brings together more than 200 of the world’s largest and most influential corporations in an effort to enhance the sustainability of corporate activity. Their premise is that sustainability improves corporate profitability, enhances corporate reputation, and allows for “market-friendly” approaches to environmental protection.

Critics have argued that the concept of sustainability is fuzzy, difficult to specify with precision, and impossible to implement as a clear policy agenda. One early critic, Sharachandra Lélé, argued that because of the many frequently contradictory uses of the term, sustainable development “is in real danger of becoming a cliché . . . a fashionable phrase that everyone pays homage to but nobody cares to define.”⁷ Lélé accepted the goal of meeting current needs without compromising future generations; his quarrel was with deeper assumptions underpinning mainstream sustainability thinking. These include a narrowly technical focus on the problem of poverty while ignoring its fundamentally sociopolitical roots; a neoclassical emphasis on economic growth as an end in itself, rather than a more precise specification of how to meet people’s basic needs; and a lack of clarity about exactly what is to be sustained, for whom, and for how long. Lélé also worried that mainstream notions of sustainable development placed an undue burden of structural and value adjustment on the South, so that current consumption practices in the North could continue. The idea that the challenge lay primarily in the South was, in this view, more a reflection of the power of some actors and institutions to set the global agenda than an accurate reflection of the problem.

Other observers viewed the Brundtland Commission’s efforts in a harsher light, seeing the commission’s advocacy of both global economic expansion and environmental protection as inherently contradictory and intended to salvage a failing world economic order. The continued commitment to a basically unreformed global economic system was, in this view, the biggest impediment to true sustainability, and could not be resolved through tweaks to the prevailing systems of trade or technology transfer. Skeptics such as Larry Lohmann, editorializing in the influential British environmental journal *The Ecologist*, questioned whether the Brundtland Commission had provided an agenda for change at all: “Never underestimate the ability of modern elites to work out ways of coming through a crisis with their power intact.”⁸

Despite such criticisms, the concept of sustainability provided a useful normative bridge in global politics by linking the twin concerns of environment and development. By the time the world gathered again in Rio in 2012, rhetorical commitments to “sustainability” had become deeply institutionalized within global environmental summitry and the UN system. A chief output of Rio+20 was to authorize the formulation of a set of Sustainable Development Goals (SDGs) which would chart the specific course for the world’s nations to implement sustainability policies. The SDGs supplanted the earlier Millennium Development Goals (MDGs), which were adopted in the wake of the UN’s Millennium Development Summit held in 2000. As discussed in Chapter 16 by Sakiko Fukuda-Parr of the UN Development Programme, the SDGs grew out of a fundamentally different political process than the MDGs, and take a fundamentally different conception of development challenges. The MDGs were hurriedly assembled by a small group as a desperate attempt to sustain international momentum for development in the wake of the Millennium summit; the SDGs, in contrast, were hammered out as part of a more participatory,

multipronged, and at times cacophonous process of deliberation. Also, and significantly, the SDGs apply to all nations, where the MDGs had set targeted outcomes only for developing countries. The SDGs are also much broader and more ambitious (a point of strategic controversy, as Fukuda-Parr notes). Consider the goal on water. Where the MDGs had simply called on the world to reduce by 50 percent the proportion of the world's people lacking access to drinking water and sanitation, the SDGs call for universal access to adequate water and sanitation, as well the protection of freshwater ecosystems, reductions in pollution, the implementation of better water management programs, and several other provisions.⁹ Fukuda-Parr endorses such bold expansion of the international community's ambition—indeed, she applauds the goals for reversing “the misplaced trust in simplicity as a virtue of global goal setting.” She also acknowledges potential pitfalls ahead, including the risk that the goals are embraced selectively rather than comprehensively (a problem given their intersectional character) and the danger of limited implementation at the national level. Others have offered a more skeptical view in terms of the power relations underlying the SDG process and the conceptualization of development it reflects.¹⁰

We also include in this section readings representing several broad categories of criticism of the concept of sustainability—both in conceptual terms and in terms of its increasingly institutionalized expression through the SDGs. First is the problem of global consumption. In contrast to the relatively optimistic scenario of an ecologically modernizing, goal-governed world, Peter Dauvergne (Chapter 17) conjures a far deeper crisis of global unsustainability rooted in “the consumer society”—a crisis that is less amenable to technical and managerial solutions. Here, the primary culprit is not the underdeveloped, impoverished status of the global South but rather the consumption habits of the wealthier populations in the North and, through international trade and the diffusion of consumerist lifestyles, the more affluent segments of society in the global South. Consider the state of California in the United States, often held up as the pinnacle of the consumer society. Californians protect their own environment through the implementation of strict conservation laws—while simultaneously continuing their high-throughput lifestyles through international trade and the exploitation of resources from distant lands. A newspaper report documenting these tendencies was called, tellingly, “State of Denial.”¹¹

The consumer society's ecological shadow raises several questions that challenge mainstream practices in industrial life: Can the Earth survive as a world where more is always assumed to be better? Are technical fixes going to be enough, when influences as varied as Hollywood, Facebook, hip hop, and the World Bank market an acquisitive logic to developing countries as the proper model for their own development? As one early exploration of the question of consumption put it, quite simply: How much is enough?¹²

A related variable in developing blueprints for sustainability is the question of scale. The example of California stresses the need to see the whole system, rather than drawing premature conclusions about success or failure from a study of just one component part. In no small measure due to frustration with national governments,

the past few decades have seen a burgeoning “sustainable cities” movement.¹³ While such movements offer great potential to improve the energy, water, and land-use efficiencies of urban areas, the idea that cities can truly be “sustainable” raises more profound questions about whose activities actually sustain the high-throughput lives of modern urbanites.

A second broad category of critique argues that what we should be seeking is not in fact sustainability but rather, resilience. Like sustainability, resilience has many definitions. Most center on the ability of complex, adaptive systems to respond to significant changes and stresses. Again, cities provide an instructive example. While many cities are working to reduce carbon footprints and enhance the efficiency of resource use, a distinct agenda has also emerged: preparing for and adapting to the buffeting effects of environmental harm, and in particular of a changing climate. Preparing for life in a world of increased flooding, more frequent and intense droughts, sea-level rise, and a less stable, more unpredictable climate has pushed the concept of resilience to the forefront of environmental debates.

Does resilience provide a more effective template than sustainability for environmental action in a warming world? In Chapter 18, the environmental lawyers and academics Melinda Benson and Robin Craig argue that it does. The reason is the explosive rate of change we are witnessing in the era they and others have dubbed the “Anthropocene” to stress the dominance of human impacts on the Earth. In this world, they argue, “extreme complexity, radical uncertainty, and unprecedented change” rule the day. Resilience, to them, provides a more useful organizing concept for our thinking and action: it acknowledges the ubiquity of change, and it sets as the primary goal not some idealized equilibrium state we will never achieve, but rather that we recognize and avoid crossing critical thresholds. William Rees (Chapter 19) rejects this premise. For Rees, who pioneered the conceptual development and measurement (or at least estimation) of a society’s “ecological footprint,” sustainability remains both an important normative commitment and a dynamic, actionable framework for policy that includes an inherent commitment to resilience as Benson and Craig define that term.

Finally, whether the goal is sustainability, resilience, or some complementary blend, what exactly is it that we are trying to sustain, or protect, or achieve? We conclude this section with a brief excerpted essay from the book *Designing Regenerative Cultures* by Daniel C. Wahl (Chapter 20).¹⁴ For Wahl, sustainability is not enough because “what we are actually trying to sustain is the underlying pattern of health, resilience and adaptability that maintain this planet in a condition where life as a whole can flourish.” To achieve, much less sustain that sort of world, in his view, requires a broad process of cultural transformation, in which we place the health and flourishing of life (human and more-than-human) at the center of our notions of progress and achievement. Following the green design guru Bill Reed, Wahl sets out some principles to guide such transformation. These include limiting technologies to appropriate scale, embracing life-sustenance as the foundational goal and evaluative criterion, and employing precaution (some might say humility) in the face of the complexity of the systems to be redesigned and re-engineered.

The question of transformation provides a useful bridge to the concept of environmental justice underpinning Part Six. For many of the thinkers and movements reflected there, sustainability is of little value if that which is sustained is inequitable, and resilience could simply mean the snapping back into place of systems of concentrated power and injustice.

In conclusion, we might well ask whether the idea of sustainability can break the North–South stalemate on environment and development that emerged at the Stockholm conference, and that remained much in evidence 40 years later at the 2012 Rio+20 summit. To some extent, it already has; there is no question that the power of the concept—and in particular, its vision of harmonizing environmental quality and economic well-being—has fundamentally altered the global debate, as evidenced by the SDGs. The next and more difficult step is to clarify whether and how that vision can be realized. Whether the debate on sustainability moves to this more operational level hinges on our ability to meet several challenges. We must redirect our gaze to encompass the system as a whole and not just the world's poorer or less developed regions; we must clarify and reconcile the goals that characterize radically different visions of a sustainable (or resilient) society; and we must broaden our vision to engage the contested issues of power, wealth, and authority that underlie current environmental problems.

Thinking Critically

1. In your judgment, does “sustainability” represent a powerful synthesis of environmental protection and economic development? Or is it a contradiction in terms? Is sustainability compatible with a wide array of definitions of “development,” or does it narrowly limit what development can mean?
2. How do you think the members of the Brundtland Commission would respond to the criticisms voiced by Dauvergne? By Wahl? Imagine yourself as a senior diplomat participating on an international commission seeking to implement their ideas? What are the barriers? Where would you begin? Is that where such change is likely to come from?
3. Does it make sense to have a common framework for sustainability, such as the SDGs, across the diverse societies of the global South? For the whole planet, North as well as South? Is a concept such as sustainability universal, or is it inherently contingent on local circumstances and culture? What is the purpose or value, if any, of setting global goals such as the SDGs?
4. Are you an overconsumer? How much control do you have over your consumption? What aspects of your life would have to change for you to change from an overconsumer to a sustainer? What are the barriers to the sort of change that would be required to address Dauvergne's critique of consumption?

5. What can we learn from the debate between Rees and Benson & Craig? Does it make sense to work for a synthesis between the concepts of sustainability and resilience?

NOTES

1. For an accessible discussion of the role of paradigms in shaping views of world politics, see James Rosenau, *Thinking Theory Thoroughly: Coherent Approaches to an Incoherent World* (New York: Perseus Books, 2000). With specific regard to perspectives on environmental change, see Jennifer Clapp and Peter Dauvergne, *Paths to a Green World*, 2nd edn. (Cambridge, MA: MIT Press, 2011).

2. On the concept of development without growth, see Herman E. Daly and John B. Cobb Jr., *For the Common Good: Redirecting the Economy Toward Community, the Environment, and a Sustainable Future* (Boston, MA: Beacon Press, 1989).

3. World Commission on Environment and Development (WCED), *Our Common Future* (New York: Oxford University Press, 1987), p. ix.

4. WCED, *Our Common Future*, p. 43.

5. On ecological modernization, see Arthur P. J. Mol, "Ecological Modernization and the Global Economy," *Global Environmental Politics* vol. 2 no. 2 (May 2002): 92–115. For a critical view, see Frederick H. Buttel, "Ecological Modernization as Social Theory," *Geoforum* vol. 31 no. 1 (2000): 57–65.

6. World Business Council for Sustainable Development, "Our History: The Birth of the WBCSD" available at <https://www.wbcsd.org/Overview/>

7. Sharachchandra M. Lélé, "Sustainable Development: A Critical Review," *World Development* vol. 19 no. 6 (1991): 607–621.

8. Larry Lohmann, "Whose Common Future?" *The Ecologist* vol. 20 no. 3 (May/June 1990).

9. On the content of the SDGs, see Sustainable Development Goals Knowledge Platform, "The Sustainable Development Goals," available at <https://sustainabledevelopment.un.org/topics/sustainabledevelopmentgoals>

10. See, for example, the feminist critique of the SDGs presented in Valeria Esquivel, "Power and the Sustainable Development Goals: A Feminist Analysis," *Gender & Development* 24 (2016): 9–23.

11. "State of Denial: A Special Report on the Environment," *Sacramento Bee*, Sunday, April 27, 2003.

12. Alan Durning, *How Much Is Enough? The Consumer Society and the Future of the Earth* (Washington, DC: Worldwatch Institute, 1992).

13. See, for example, Sustainable Cities International (<https://sustainablecities.net>) and Smart Cities Dive (<http://www.smartcitiesdive.com>).

14. Daniel C. Wahl, *Designing Regenerative Cultures* (Charmouth, UK: Triarchy Press, 2016).

FROM THE MILLENNIUM DEVELOPMENT GOALS TO THE SUSTAINABLE DEVELOPMENT GOALS: SHIFTS IN PURPOSE, CONCEPT, AND POLITICS OF GLOBAL GOAL-SETTING FOR DEVELOPMENT

SAKIKO FUKUDA-PARR*

Introduction

The launch of the Sustainable Development Goals (SDGs) in September 2015 at the United Nations (UN) General Assembly was met with two contrasting reactions. Perceptions that they are bloated and lacking in coherence led commentators to suggest alternative reading of the acronym “SDGs.” The Economist’s leader on 28 March 2015 suggested “Stupid Development Goals” (see <https://www.economist.com/leaders/2015/03/26/the-169-commandments>). The US development economist, William Easterly, dubbed them “Senseless, Dreamy, Garbled” (at

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<http://foreignpolicy.com/2015/09/28/thesdgs-are-utopian-and-worthless-mdgs-development-rise-of-the-rest/>.

Yet for those who had been engaged in the three-year-long negotiations—or rather battles—that led to the 17 goals and 169 targets, there was a measure of satisfaction with the wide scope and depth of these goals. In large part, this is because the SDGs have addressed many of the key shortcomings of the Millennium Development Goals (MDGs). For example, the Center for Economic and Social Rights, which lobbied hard for an agenda that would reflect the core principles of human rights, has cautiously opined: “We can declare partial success in every category—which is more than we might have dared hope for in 2010 under the ‘reign’ of the deeply inadequate MDGs” (Donald 2015).

SDGs Differ from the MDGs in Purpose, Concept, and Politics

The SDGs are a major departure from the MDGs. They differ not just in the number of goals and targets, but in their very purpose, conception, and the political process that drove their elaboration.

First, the MDGs were a North–South aid agenda. The goals and targets—such as universal primary education—were mostly relevant for developing countries only, and were sometimes labelled “Minimum Development Goals” (Harcourt 2005, 1). Moreover, as I have explained in an earlier paper with David Hulme (Fukuda-Parr and Hulme 2011), they were driven by development ministers and heads of development agencies seeking a new rationale for aid in the context of post-Cold War geopolitics and neoliberal globalization. The MDGs were particularly helpful in communicating a clear purpose of development aid to mobilize public support. In contrast, the SDGs are a global agenda for sustainable development. They are universal goals that set targets for all—not just poor—countries, and are as relevant for the USA as for Liberia. They emerged from the 2012 Rio+20 Conference, driven by the environment ministers, from countries in both the global North and South, and especially from middle-income countries such as Brazil and Colombia. As the debates about successors to the MDGs opened in July 2012, the UN Secretary-General structured a debate for setting the “Post-2015 agenda,” creating a High Level Task Force of Eminent Persons chaired by the Prime Minister of the UK and Presidents of Liberia and Indonesia, created a UN Task Team, and appointed an Assistant Secretary-General in charge of the process. In parallel, the Rio+20 Conference process adopted an agenda that included an initiative to elaborate and set the SDGs, to be managed by an inter-governmental group, an “Open Working Group” of the General Assembly. These two processes proceeded in parallel, and combined over time to elaborate the declaration to be adopted at the 2015 General Assembly, encompassing both the agenda and the goals.

Second, the MDGs focused on poverty—understood as meeting basic needs—and its alleviation. This was a new and a narrow conception of development. For decades, development had focused on enlarging the productive capacity of economies to make possible improved living standards of people. The eight MDGs and 21 targets were limited to ending extreme poverty, thus reconceptualizing development. In contrast, the SDGs are about sustainable development. This incorporates ending poverty as a core objective, but the 17 goals and 169 targets set out a broader agenda that includes environmental, social, and economic sustainability.

Third, MDGs were drafted by technocrats who undertook limited consultations with other sources of knowledge and expertise, a process widely acknowledged as a major weakness (UN Task Team on the Post 2015 Agenda 2012). In substance, this meant that the formulation of the MDGs was not tethered as it should have been to the ongoing debates about development priorities, and failed to connect to and build on the international agendas for action negotiated at the milestone UN-led development conferences of the 1990s, such as the Cairo Conference on Population and Development, and the Beijing Conference on Women. The Millennium Declaration was largely drafted by the office of the UN Secretary-General, and a handful of UN staff crafted the MDGs in a closed room.

Shortcomings of the MDGs

Although the MDGs have been widely touted as a “success,” they have also been widely criticized. From the beginning, there was lukewarm reception by governments which suspected that they would become another source of aid conditionality. Civil society groups protested the omission of inequality, weak goals on global “partnership” that lacked quantitative targets, the lack of ambition in the targets, and many omissions such as women’s reproductive health issues, governance, conflicts, economic growth and employment, and many other important objectives. Human rights scholars and practitioners—including the UN Office of the High Commissioner for Human Rights (OHCHR)—have consistently criticized the MDGs as not adequately aligned with human rights standards and principles, especially equality, participation, non-discrimination, and transparency (OHCHR 2008). OHCHR (2008) has also criticized them for overly technocratic implementation, based on an assumption that resources and technology are the answer to poverty. In fact, the MDGs appeared to take back poverty analyses of the 1990s that concluded the source of persistent poverty was not just economic variables but could be traced to the poor lacking political power (see e.g. World Bank 2000). The MDGs presented a simplistic vision of meeting basic needs for all without recognizing the root causes of poverty embedded in power relations and exacerbated by current economic models of neoliberal globalization that prioritize corporate profit over human rights.

As a process, many pointed out that they undercut ongoing policy debates with targets that were under-ambitious or irrelevant to current challenges, such as universal primary education in countries where it had been largely achieved. Feminist activist Peggy Antrobus (2006) dismissed the MDGs as a “major distracting gimmick” that has served to undermine local agendas and political dynamics. UN agencies which had been pursuing agendas adopted at the 1990s UN conferences found the imperative to follow the MDGs confusing, particularly as the MDGs were sometimes inconsistent with the conference goals. For example, the hunger goal in the 1996 World Food Summit was to cut the number of people undernourished but the MDG target revised this to reducing the proportion of the population undernourished. Heterodox economists argued that the MDGs were misdirected, and did not challenge the neoliberal economic model that was failing to produce enough decent work and exacerbating inequalities, and ignored the key issues of systemic reforms in the global economy.

The MDG agenda was extraordinarily narrow, reflecting a top-down process of elaboration that was untethered from the consultative and reflective process that set UN development agendas over the 1990s and was monitoring their implementation. For example, the entire 13-point agenda for action adopted at Beijing was reduced to MDG Goal 3; gender equality and women’s empowerment were addressed via a single target, to achieve male/female parity in primary and secondary education. The MDGs were goals, not an agenda, and picked out only the numeric goals in the conference agendas of the 1990s. No one would disagree with the importance of what was in the MDG list of eight goals and 21 targets, but what was critical was what was not there. As suggested above, some of the most pressing contemporary challenges were left out: inequality, unemployment and stagnant wages, climate change, financial market volatility, migration, the ineffectiveness of global institutions to manage globalization, to name a few.

In sum, stakeholders with a wide range of perspectives were deeply frustrated by the MDGs that came to dominate international development discourses. The targets were not “in synch” with their agendas and vision, and disconnected from current national and global policy debates. They were concerned by the narrow breadth that was insufficiently “transformative” to meet the challenges of development in the 21st century—that required a change, of course, not just continuation of business as usual, but shifts in institutions and economic models. The negotiations for the post-2015 agenda thus unleashed massive mobilization to correct the shortcomings of the MDGs. In the next section I focus on the ways in which the SDGs represent a significant shift, as regards both the process followed to develop them, and the outcome.

A Broader and More Transformative Agenda

In stark contrast to the technocratic process of elaborating the MDGs discussed in the last section, the formulation of the SDGs was consciously

set up as a process of political negotiations amongst states. Though the UN Secretary-General initially appointed a High Level Task Force of Eminent Persons to make proposals, it was the inter-governmental body—the Open Working Group of the UN General Assembly—that formulated the SDGs, through a process of intense diplomatic negotiations and open multi-stakeholder debates. This process took place over three years, and was structured to facilitate debates focused on specific issues. The process also structured dialogue with nine so-called “major groups,” convened to represent the interests of specific social groups, amongst which was women (see <https://sustainabledevelopment.un.org/majorgroups/about>). As a process for elaborating international development priorities, it involved an unprecedented level of participation by governments, civil society groups, academics, business groups, and UN agencies, in intense debates in meetings around the world and over the internet (Norton and Stuart 2015).

A March 2015 vision statement by the Post 2015 Women’s Coalition (2015a) characterizes the views of many civil society groups and their analysis of poverty and inequality as rooted in the structures of power in the economy, society, and politics, and furthered by neoliberal economic models that turn a blind eye to human rights. Women’s groups advocate systemic reforms in current approaches that are exacerbating poverty and inequality through environmental, financial, political, and social crises. They emphasize the obligation of governments to give priority to human rights over economic interests, including women’s rights—such as the more “political” issues of sexual and reproductive rights and women’s unpaid care as a barrier to realization of their human rights—to women’s empowerment (and sustainable development). Their March 2015 press release of this statement states:

The Coalition also demands to see dramatic changes in the state of macroeconomic policies and calls for a new framework that prioritizes people over profit, actively combats feminized poverty, and redistributes unpaid care and non-care work borne disproportionately by women...The coalition is deeply disturbed that as discussions at the UN on the Post-2015 Development Agenda and the CSW [Commission on the Status of Women] unfold, sexual and reproductive health and rights are being erased and have been excluded from the conference’s Political Declaration.

(Post 2015 Women’s Coalition 2015b, 1)

Drawing attention to those aspects of gender power relations which are perceived variously as too private, too sensitive, or irrelevant to the concerns of development is critical and, since the 1990s, gains made on a range of these issues at Cairo and Beijing in particular have been defended, but not extended, from roll-backs instigated by conservative interest groups including religious groups. The Executive

Director of ARROW (the Asian-Pacific Recourse and Research Centre for Women), Sivananthi Thanenthiran, said:

Some special interest groups can enjoy the luxury of dismissing the complex realities of women's lives by making it increasingly difficult for member states to discuss and agree on human rights issues, especially sexual and reproductive health and rights. But we do not have this luxury; without autonomy over bodies, we cannot achieve autonomy over our lives.

(Post 2015 Women's Coalition 2015b, 1)

Compared to the MDGs, the agenda of the SDGs is broader—with respect to gender as well as overall—and potentially more transformative. The SDGs do address many more aspects of these complex realities of women's lives, and therefore represent a considerable advance on the MDGs, reflecting the participative and broader consultation process that led to them.

The specific goal focusing on women and gender concerns, Goal 5, reflects gender equality and women's empowerment as a multi-dimensional process, going beyond straightforward outcomes, and incorporates targets related to gender-based violence, harmful practices, unpaid care work, voice, sexual and reproductive health and rights, economic resources, technology, and legislative change. Critically, gender issues are not confined to Goal 5 but are also reflected in other goals, such as those related to education and health. In the field of health they include targets for important policy choices: Target 3b on Research and Development in vaccines and medicines, access to essential medicines, and affirming the flexibilities in applying patent restrictions in accessing medicines and health-care technologies imposed by the World Trade Organization's trade rule on intellectual property ("TRIPS flexibilities"); Target 3c on health financing; Target 2c to stabilize food commodity markets; Target 1b on pro-poor and gender-sensitive development strategies; and Target 6b on local community participation in water management.

The goals and their targets address and incorporate many issues that civil society groups or the developing countries advocated for that address power structures that produce and reproduce poverty and inequality, including shifts in economic models. The SDGs also include "means of implementation" as a goal of its own (Goal 17) and as targets for each goal, recognizing the need to change policies and institutions if transformative change is to take place. Inequality, likewise, has a goal of its own (Goal 10), and there is emphasis on the inclusion of marginalized social groups through the other goals. They include goals for governance (Goal 16). The SDGs also incorporate economic dimensions—on which the MDGs were silent; they include a goal for growth that is sustainable and inclusive (Goal 8).

The adoption of a stand-alone goal on inequality (Goal 10) that addresses disparities within and between countries is a significant departure from the MDGs; they

explicitly excluded this politically sensitive issue. It was a contentious issue throughout the negotiations, which was resisted particularly by developed countries, but advocated by civil society groups and developing countries (G77). It was not included in the initial list proposed by the High-Level Panel appointed by the UN Secretary-General, and led by Prime Ministers and Presidents of the UK, Liberia and Indonesia. Goal 10 requires a reversal rather than acceleration of current trends in many countries, and it is relevant to all countries, regardless of the level of income. As such, it draws international attention to the need for wealthy, ostensibly “developed” countries to address issues which draw the model they have followed into question. Goal 16, on governance and human rights, was another contentious one, and its inclusion was mostly resisted by African and Arab states over issues of LGBT rights, but was ultimately included if with a weaker language (Donald 2015). This speaks not only to institutions of national governance but also global governance, including an explicit reference to “strengthening the participation of developing countries in institutions of global governance” (Target 16.8).

Reversing the MDG Approach to Global Goal Setting

The broader agenda of the SDGs reflects not only a shift in priorities but a reversal of the MDG approach to goal setting. Departing from the principle that global goals should be short and memorable, the SDGs include 17 goals and 169 targets. Moreover, they are not tangible and measurable outcomes – such as all children in school—that are easy to understand and difficult to disagree with. Some SDG goals and targets are focused on complex concepts and the quality development processes such as “sustainability” and “inclusion,” rather than tangible and measurable outcomes.

Andrew Norton and Elizabeth Stuart have expressed a widely held view on the merits of the MDGs and the weakness of the SDGs:

One of the great successes of the Millennium Development Goals (MDGs) was that they were brief. They fit on the back of a business card—one that could be slipped as readily into a pocket of a US aid official as that of an Indian farmer...If we stick with the 17 Sustainable Development Goals (SDGs) currently agreed, this is clearly not going to be the case after 2015. Even if you can remember all 17, there are still too many for civil society groups and other stakeholders to rally around all of them.

(Norton and Stuart 2014)

However, these “strengths” of the MDGs acclaimed by their defenders—simplicity, measurability, and consensuality—are also their weakness (Fukuda-Parr 2013). Simplicity allowed simplification of development as a concept. A short list of goals could not adequately encompass the multiplicity of development challenges, while numeric goals—based on purely tangible and quantifiable outcomes—are inherently reductionist if used to articulate a vision of development. Goals use the power of

numbers to communicate a development agenda with a sense of scientific certitude and serious intent with potential for accountability. But in reality, quantification reduces complex and intangible visions—such as development that is inclusive—into concrete measurable objectives such as all children in school. Recent literature in the sociology of knowledge theorizes the distorting effects of quantitative indicators used in global governance on concepts and action by setting standards for behavior (see e.g. Merry 2011). So global goals can lead to distorting effects, redefining the meaning of development, and shaping policy by creating incentives to over-focus on target achievement and neglect other important objectives (Fukuda-Parr 2014). An empirical study of 11 MDG goals and targets under the Power of Numbers research project found that MDGs had numerous effects on shaping development discourse that favored target-driven strategies, and in most cases undermined human rights and capabilities approaches that emphasized empowerment of people and addressing the root causes of poverty and unequal development (Fukuda-Parr et al. 2014).

The MDGs communicated a simplified concept of development as meeting basic needs, stripped of the challenges of inclusions and sustainability, and remained silent on the need to reform institutions. They framed development discourses and debates in this narrow vision. Framing sets the boundaries of analysis for policy choices. Framing is a process that determines how problems are defined, causes are explained, and policy responses and priorities are justified. Framing shapes narratives that can have a powerful effect in shaping policy choices with respect to priorities for allocation of resources, policy reforms, and in mobilizing support for implementation of policies. According to Morten Bøås and Desmond McNeill (2003), framing creates a hegemony of ideas about problems and solutions, keeping out radical ideas that are seemingly unthinkable.

The SDGs also reverse another MDG approach, to set a global goal that is also to be achieved by all countries, neglecting national contexts, and against which governments would be held accountable. Ignoring the starting point, they were a biased metric, unfair to countries farthest behind with the largest challenges to meet the 2015 targets. SDGs, on the other hand, are to be achieved globally, making room for national adaptation.

Potential Pitfalls in Implementation: Selectivity, Simplification, and National Adaptation

While the SDGs offer a broader agenda that has potential for course correction than the MDGs, will they make a difference? There is a risk that the most transformative goals and targets would be neglected in implementation through selectivity, simplification, and national adaptation.

With 17 goals and 169 targets, which handful will receive policy attention, and mobilize effort and resources? Selectivity could lead to neglect of goals and targets that would address structural issues. It is widely believed that the MDGs mobilized action, yet not all goals and targets were the same. Some such as employment and

hunger were poor cousins until the 2008 financial crisis and recession hit. Will SDG 10, to reduce inequality within and between countries, or Target 5.a, to ensure legal right of women to land ownership, receive attention?

The carefully negotiated language of the 17-goal agenda, emphasizing intangible qualitative objectives of equitable and sustainable development, has led to a complex language. The temptation would be to simplify this language, and strip away the important qualifiers. Already, a private initiative to publicize the SDGs—Global Goals—has simplified them, shortening the titles and reinterpreting them in the process. Barbara Adams (2015) points out in her recent Global Policy Watch blog, “the concept of ‘sustainable development’ is completely lost” as words like “just,” “inclusive,” “sustainable” are removed and replaced by “responsible” and “strong” (“Public SDGs or Private GGs?,” available at www.globalpolicywatch.org/blog/2015/09/25/public-sdgs-or-private-ggs/, last checked 9 January 2016).

Another risk is the process of national adaptation. This reduces the political pressure on national governments to address the political causes of poverty and inequality. It can then be an invitation to water down the ambition of the SDGs. Implementation of the inequality goal is particularly challenging, as it is one of the few goals that requires a major change in course from the trends of the last decade (Nicolai et al. 2015). As suggested earlier, challenging inequality involves questioning and shifting the economic model that has been promoted over the last decade. This goal will prove as problematic and challenging as Goal 5: this, too, involves profoundly questioning power and the current economic model. For these goals to be a “course correction” to development in reality, the challenge will be to ensure that the hard-won gains on politically contentious issues are not lost in implementation. The SDGs are a politically negotiated consensus that has no enforcement mechanism built in. The onus falls on civil society groups to leverage the SDGs as course correction by putting pressure on governments and other powerful actors to account for the commitments made.

The MDGs had surprising effects. They were more effective than anyone expected in gaining traction as a dominant discourse of development. Their effects were not all benign. The SDGs have reversed the misplaced trust in simplicity as a virtue of global goal setting. It is hard to predict what consequences they will have.

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THE PROBLEM OF CONSUMPTION

PETER DAUVERGNE*

Seasoned sailors avoid the clockwise vortex of calm winds and slow-moving currents of the North Pacific Gyre. And with good reason. Inside this dead zone is the Great Pacific Garbage Patch, where jellyfish ingest tiny plastic pellets in a floating graveyard of plastic at least twice the size of the US state of Texas. Here rests our empty plastic water bottles, lost footballs, and disposable cigarette lighters.

The next decade will likely see this Garbage Patch double in size as even more plastic washes out to sea. Sunlight will eventually break down much of this debris into small pellets. But this is hardly good news, as sharks, tuna, and whales feed on the pellet-eating jellyfish. Why, even with the rise over the last few decades of environmental norms, structures, organizations, policies, financing, and rules of governance, are the oceans continuing to fill with garbage? And this is only one of many possible examples of escalating global environmental problems. Why is the Arctic melting, faster and faster? Why are over half of the world's original forests and wetlands now gone?

There are, of course, many entwined reasons. One of the biggest is "the problem of consumption," not only what consumers choose and use, but more significantly how systemic drivers shape the quantities, costs, and benefits of producing, distributing, and disposing of consumer goods. At the core of this problem is the inability of environmental governance to alter, in any fundamental way, the global ecological effects of these drivers—such as advertising, economic growth, technology, income inequality, corporations, population growth, and globalization—that together are causing consumption, much of which is wasteful, to rise steadily worldwide.

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On many measures, policies, actions, and technologies to shape consumption appear to be “improving” environmental management. But too often the measures are close-up snapshots that cut out a much bigger, more complex, global picture of crisis. One common set of measures zooms in on consumer use of a product. Here, it is easy to find progress: simply compare the energy needs of a refrigerator or microwave or TV from the 1970s with a 2010 model. Another common set of measures zeros in on national consumption patterns. Here it is harder to find positive trends. Still, many exist—from higher recycling rates to more green buildings—for those who are looking for signs that capitalist economies are capable of shifting toward some form of sustainability.

Yet all of these measures need to be put into the context of a rising global population and rising per capita consumption in a globalized capitalist economy, a system that creates incentives—indeed, makes it imperative—for states and companies to “externalize externalities”¹ beyond the borders of those who are actually doing most of the consuming. The challenge for environmentalists and policymakers is therefore about much more than influencing “consumers”—much of what is happening globally is beyond their control. Rather, it is about transforming a global system that is driving unsustainable production, much of which is increasingly masking itself as sustainable consumption. Fundamentally, this means that any move toward sustainable consumption will require much better full cost accounting and more equitable distribution of income: locally, nationally, and globally.

Research in the subfield of global environmental politics [GEP] is increasingly probing this deep problem of consumption. Examples, to name just a few, include Michael Maniates on the “individualization of responsibility,” Thomas Princen on “sufficiency” and “distancing,” Jennifer Clapp on “distancing of waste” and “norm emergence,” Doris Fuchs and Sylvia Lorek on “sustainable consumption,” Paul Wapner and John Willoughby on “lifestyle change,” Juliet Schor on the “new consumer culture,” Jack Manno on “commoditization,” Matthew Paterson on “cultural political economy,” and my work on “shadows of consumption.”² Still, across the social sciences relatively little research has probed the full complexity and difficulty of “governing consumption globally” compared with, say, the extensive research on global environmental governance and trade agreements, international environmental negotiations, or nongovernmental organizations. One purpose of this essay is to encourage more research on this topic among GEP scholars. A second is to stress the need for international efforts to govern consumption that go beyond the current Marrakech process—an attempt to draft a 10-Year Framework on “sustainable production and consumption” for the 2011 session of the UN Commission on Sustainable Development [Editors’ note: See UN Document A/CONF.216/5, 19 June 2012.] A third is to challenge the common view among international policymakers and business leaders that a greening of household consumption can significantly reduce the global costs of consumption. Here, local-to-global analysis typical of GEP scholarship has the potential to play a critical role in helping to redirect policy efforts.

The Global Costs of Consumption

The direct impact of thousands of everyday choices by 6.8 billion consumers partly explains the escalating environmental crisis. But obvious consequences—a Coke bottle floating down a smoke-colored river into the Pacific—comprise just a fraction of the real costs of consumption. Uncovering the full costs requires an accounting of the many indirect and hidden spillovers of supplying and replacing consumer products. These shadow effects of consumption can have as great, if not greater, consequences. And the globalization of corporations, trade, and financing is making these shadows longer, deeper, and harder to see.

Old IBM and Apple computers are piling up in developing countries with relatively low environmental standards, where recycling hazardous parts involve few safeguards for workers, many of them children. Inequalities are growing within and between countries, as costs spill into places with less power, from the slums of India to the aboriginal communities of North America. Wasteful and excessive consumption is increasing as consumer prices underestimate the environmental and social costs of everything from a cup of Colombian coffee on sale in Paris to a made-in-China Barbie on sale in San Francisco. And future generations are being exposed to great risks, with ignorance a green light to proceed rather than a sign for precaution.³ Perhaps most worrying of all, over time the costs of consumption are drifting into the world's most vulnerable ecosystems and poorest societies as powerful states and corporations externalize the environmental and social costs from the majority of consumers. This is adding to a growing crisis, for example, for the Inuit communities in the Arctic as industrial processes—from manufacturing in Europe to incinerating garbage in Asia—poison the land with persistent organic pollutants that travel up food chains and grasshopper across the globe through a process of repeated evaporation and redeposit until settling in cold climates.⁴ Such a process leaves consumers largely unaware—and corporations largely unaccountable for—the true costs of consumption. How many consumers in Tokyo, for example, would connect living in a concrete high-rise to deforestation in Papua New Guinea? Yet, over the last half-century, the most common use of the giant old-growth trees of Southeast Asia and Melanesia has been for plywood paneling to mold concrete in Japan. Called *kon pane* in Japanese, construction companies generally burned or left these panels to rot after only a few uses. Why such fantastic waste? The answer is simple: it was cheaper to buy new panels than clean the old ones.⁵ Consumers elsewhere are equally unaware of the externalities of consumption on the tropics. China's decision in 1998 to ban natural forest logging at home caused timber imports to jump. Overall timber imports have quadrupled over the last decade; and today half of all traded timber lands in China.⁶ Much of the timber entering China is illegal—as high as 80 percent from countries like Indonesia, Cambodia, and Papua New Guinea—thus depriving governments and communities of revenue. Chinese

consumers are not alone in purchasing and using these wood products. Chinese exports of wooden furniture to Europe and North America, for example, have been growing rapidly in recent years, with at least some of this furniture made from illegal logs from places like Southeast Asia and eastern Russia.

Rising consumption of non-timber products is also driving tropical deforestation. On Indonesia's outer islands, for example, plantation companies are burning down degraded forests to clear land for oil palm for the rising worldwide consumption of margarine and oil for deep-frying. Raging forest fires every year in Indonesia are now one of the world's biggest sources of greenhouse gases. Another example is in the Amazon, where the primary cause of deforestation is land-clearing for cattle ranches as Brazil strives to hold onto its position as the world's largest beef exporter by volume in a global marketplace where meat consumption is rising quickly. Clearing land for soybean plantations (for export markets from animal feed to processed foods) is another core cause of deforestation in the Amazon.

Granted, this is all producing lots of cheap food—as well as lots of profits for multinational agricultural companies and the global fast-food industry.⁷ But the costs for the tropics far outweigh the benefits for increasingly obese consumers. And this is only one of many possible examples of how an unbalanced global economy is displacing much of the costs of consumption onto the world's poorest peoples and most vulnerable ecosystems. Just look at the families in Manila now living inside smoking mountains of fast-food wrappers, car tires, and toxic waste drums. Or at the polar bears slipping into endangered status as their Arctic home melts away.

Governing Consumption Globally

Many factors complicate global environmental governance of consumption. A growing world population and rising per capita incomes are two of the most significant. The world population grew during the second half of the 20th century more than it had in the preceding four million years. Since the 1970s, the global economy has been expanding even faster than population, with world Gross Domestic Product (in constant US\$ 1995) almost tripling from 1970–2000. The global economy grew even faster from 2001–2006: faster than during any five-year period since World War II.⁸

World economic growth slowed considerably in 2008 and 2009 during the global financial downturn. Yet the future will still see a much larger world population and, unless the world economy collapses, much higher per capita rates of consumption. By late 2009, the International Monetary Fund already saw many signs of a “recovery” of the world economy, with much higher growth predicted for 2010.⁹ And most analysts still expect the global middle class to triple by 2030: a group able to afford big-ticket items like cars and home appliances. By 2050 the world population is set

to exceed 9 billion, with over 95 percent of this increase occurring in developing countries like Indonesia, India, and China. In this setting, changing the environmental choices of enough consumers fast enough to make a global difference is very hard, and getting harder.

At the same time, the world market—what some call the global consumer culture—is widening and deepening. One indicative statistic is the value of world merchandise exports, which now exceeds US\$16 trillion. This is up from US\$6 trillion in 2000, an amount that by then was already more than a 100 times higher than in 1948. Another revealing statistic is the flow of foreign direct investment into developing countries which, before the global financial crisis of 2007–09, had reached US\$380 billion in 2006, up from US\$22 billion in 1990.¹⁰ Economic globalization can allow new technologies or more environmentally friendly products to reach more consumers, faster and with enhanced efficiencies for resource and energy inputs. The environmental history of the automobile—including a diffusion of regulations and technologies from places like California to the rest of the world—provides one example of how the globalization of markets can ramp up global standards.¹¹ Still, such benefits are more than outweighed by the environmental costs spilling from the globalized production, trade, and investment chains that supply increasing numbers of consumers with goods and services.

Many other forces and factors also influence the sustainability of consumption. Advertising to influence consumer decisions is one obvious source. Worldwide, trillions of dollars are spent each year to convince consumers to buy new products and services: an amount that's growing fast under many guises, from athletes wearing brands to TV actors drinking Starbucks coffee. This is deepening a culture of consumerism, especially among high-income earners. All of the messaging is saying buy more, consume more to be happy. Advertisers creatively promote “perceived obsolescence” and imbue buying something like a car with feelings like self-worth, freedom, adventure, and success. This is hardly unique to the auto industry, however: the same is true for computers, refrigerators, cell phones, and so on.

And advertising is only one of the factors making it difficult to influence consumer decisions consistently and effectively. Others include habits, skepticism, convenience, availability, affordability, future savings, and opportunity, to name just a few. Many consumers ultimately want ease of purchase and good value; some are also inconsistent, saying one thing and doing another. Genuine and perceived uncertainty in what actually comprises “sustainable consumption” and “sustainable lifestyles” can also cause consumers to lose interest or confidence, providing a justification for some people to prioritize other factors above environmentalism.

Moreover, consumers buy products not only for personal reasons, but also in response to socioeconomic constraints, opportunities, and expectations. The choices consumers make around whether to purchase—and then when to drive—a car is one obvious example. The availability, reliability, and affordability of public transportation

all affect this decision. Automakers know this well. Many of the biggest companies have a long record of opposing—and sometimes even destroying—public transportation (such as dismantling the electric trolley system in the United States).¹² Many other more subtle structures, however, can influence consumer choices. Sports leagues for children, for example, can leave parents driving to games hours away. Carpooling is certainly possible; but, for a parent without a car, requesting weekly rides is a tough option given the expectations of the coaches, parents, and children. As these opportunities, constraints, and expectations coalesce, even committed environmentalists commonly make decisions that increase their personal ecological footprint, thereby making choices that feel frustratingly hypocritical. This, in turn, can contribute to environmental fatigue: to an environmentalist carrying home groceries in a plastic bag despite full knowledge of the potential harm.¹³

Acting Incrementally, Failing Globally

Influencing individual consumers to act more sustainably, then, is one of the most complex and difficult challenges for environmental governance. Influencing enough consumers to affect global change is an even greater challenge. And transforming major systemic drivers of consumption is still more difficult and complex. The overall system of global environmental governance is improving management on some measures, most notably by gradually expanding markets for more efficient products with less per unit environmental impacts. One example, among thousands, is the history of the increasing energy efficiency of new refrigerators since the global phase-down of CFCs [chlorofluorocarbons] beginning in the early 1990s.

But, because these advances tend to require or contribute to more consumption, and because they tend to do little to influence the drivers of consumption or mitigate the indirect costs of producing, transporting, and disposing of consumer goods, much of the so-called “progress” is incremental, local, or temporary, unable on a global scale to produce enough change to mitigate the damaging environmental consequences of buying and using most consumer products. Sometimes this progress is even causing the costs of consumption to intensify further, with environmental conditions improving in developed countries and deteriorating in developing ones that produce and import more damaging products. This helps to explain why so many global environmental efforts are failing. It also helps to explain why so many involved in the global policy process are overly optimistic about the value of incremental environmentalism, as those with more power and wealth shift many of the costs of consumption to those with less.

International environmental laws to control transboundary pollution are helping a little to mitigate the environmental damage of consumption (e.g., the 1989 Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and

their Disposal, and the 2001 Stockholm Convention on Persistent Organic Pollutants). So are consumer labels to certify that products are from sustainable sources (e.g., the Forest Stewardship Council and the Marine Stewardship Council). So are corporate policies to increase environmental and social accountability (e.g., Electrolux's policy to audit suppliers in developing countries like China and Brazil to monitor compliance with its corporate code of conduct). And so are incentives for manufacturers to include disposal costs into the price of consumer goods (e.g., the European Commission's End-of-Life Vehicles directive, which requires manufacturers to "de-pollute" and recycle used vehicles with their logo).

Yet the big picture is clear. Even as global environmental governance continues to strengthen incrementally, the "global environment" that is being "governed" is continuing to slide into an ever-greater crisis, creating an ever-more difficult problem to "govern." To be effective on a global scale, far more needs to be done, faster, to re-imagine and reorganize an unbalanced global economy, and to shift more of the benefits to the world's poorest people and less of the costs of producing, using, and disposing of consumer goods to the most vulnerable ecosystems. This will require international policy processes to tackle head on the systemic drivers of consumption.

Conclusion: Beyond a Greening of Consumption

Such a conclusion challenges the current thinking among policymakers and business leaders that stresses the importance of greening consumer choices and lifestyles to mitigate the effects of consumption, while sustaining economic growth.¹⁴ This raises many questions about the predictive value of ecological modernization theory as a strand of environmental thought. The gist of this theory, which draws primarily on the histories of Western Europe after World War II, is that appropriate market-based environmental regulations can increase the competitiveness of industry and foster socioeconomic development. The theory assumes it is possible to stimulate green economic growth by creating incentives to promote markets and innovative technologies that increase efficiency, use less energy, deplete fewer resources, and recycle more waste. Governments need as well to develop a policy framework so companies see protecting the environment not as a cost, but as a business opportunity to improve competitiveness—and thereby create incentives for firms to go beyond the legal environmental rules in various jurisdictions. The theory predicts a gradual restructuring of global capitalism into a global system of sustainable economic growth.¹⁵

It underestimates significantly, however, the extent of the global problem of consumption, capturing instead a slice of the process of change, especially in the wealthy states of Europe. Promoting green products and sustainable lifestyles

is only scratching at the surface of a problematic capitalist world order built on ever-expanding economic growth, consumption, and markets, and efficiencies and profits realized by distancing and externalizing the environmental and social costs of producing, using, and replacing consumer goods.

First called for by the 2002 World Summit on Sustainable Development's Johannesburg Plan of Action, the Marrakech process to develop a 10-year framework of programs for sustainable consumption and production has some potential to address the problem of consumption more effectively.¹⁶ But this will require going beyond the assumptions, pathways, and measurements of an ecological modernization approach. It will require a questioning of our economic order, income inequality, and a global system sinking a disproportionate amount of the costs of consumption into the world's poorest countries and most vulnerable ecosystems. Thinking incrementally and acting locally, while beneficial, is not enough to prevent the environmental governance of consumption from continuing to fail globally. To return to the rising tide of plastics in the Pacific Ocean, succeeding globally will require far greater change than simply increasing the number of conscientious consumers refusing plastic bags, recycling plastic bottles, or sleeping contentedly on recycled plastic pillow stuffing.

NOTES

1. I am indebted to one of the anonymous reviewers for this phrasing.
2. See Princen, Maniates, and Conca 2002; Maniates 2001; Princen 2005; Clapp 2002; Clapp and Swanston 2009; Fuchs and Lorek 2005; Wapner and Willoughby 2005; Schor 2004; Manno 2002; Paterson 2007; Mol 2001, 2002; and Dauvergne 2008.
3. For the example of computer waste, see Iles 2004.
4. See Downie and Fenge 2003.
5. See Dauvergne 1997.
6. Lurance 2008, 1184.
7. For a recent analysis of the global agriculture industry, see Clapp and Fuchs 2009.
8. World Bank 2006; World Bank, World Development Indicators Online, available at www.worldbank.org.
9. IMF 2009.
10. World Bank 2006; World Bank, World Development Indicators Online, available at www.worldbank.org.
11. See Vogel 1995.
12. Yago 1984, 59–61; and Freund and Martin 1993, 135–37.
13. Some recent literature on sustainable consumption and sustainable lifestyles includes Fuchs and Lorek 2005; Vermeir and Verbeke 2006; Jackson 2004, 2005, 2008; Mont and Plepys 2008; Ali 2009.

14. The World Business Council for Sustainable Development (2008: 5), for example, concludes: "Current global consumption patterns are unsustainable. . . . It is becoming apparent that efficiency gains and technological advances alone will not be sufficient to bring global consumption to a sustainable level; changes will also be required to *consumer lifestyles, including the ways in which consumers choose and use products and services*" (emphasis added).

15. See Mol 2001, 2002; Mol and Jänicke 2009.

16. For background on the Marrakech process, see the United Nations website at <http://www.unep.fr/scp/marrakech/about.htm> [Editors update].

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THE END OF SUSTAINABILITY

MELINDA HARM BENSON AND ROBIN KUNDIS CRAIG*

The Rio+20 United Nations (UN) Conference on Sustainable Development held in June 2012 resulted in a 44-page, nonbinding “Declaration” that is generally considered a failed document. While not surprising given the recent trend of international environmental negotiations (Gardiner 2011), this inability to establish binding requirements toward global sustainability is, of course, disappointing. Its failure, however, provides an opportunity to collectively reexamine—and, we argue, ultimately move past—the concept of sustainability.

The continued invocation of sustainability in international talks, development goals, and other policy discussions ignores the emerging realities of the Anthropocene (Biermann et al. 2012)—unprecedented and irreversible rates of human-induced biodiversity loss (Wolinsky 2011; Sala et al. 2000), exponential increases in per-capita resource consumption (Myers 1997), and global climate change (Intergovernmental Panel on Climate Change [IPCC] 2007). Combined, these and other factors are increasing the likelihood of rapid, nonlinear, social and ecological regime changes (Barnosky et al. 2012). They create an urgent need to move past our current state of denial and acknowledge that we are heading into the “no-analog future” (Fox 2007). From a policy perspective, we must face the impossibility of even defining—let alone pursuing—a goal of “sustainability” in a world characterized by extreme complexity, radical uncertainty, and unprecedented change. The realities of current and emerging social–ecological system (SES) dynamics warrant a new set of tools and approaches for governance (Griggs et al. 2013; Liu et al. 2007).

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Sustainability's Failure

The concept of sustainability dates back to early UN conferences in the 1970s and has become increasingly difficult to disentangle from sustainable development, although the two concepts are not necessarily the same. In general, “sustainability” refers to the long-term ability to continue to engage in a particular activity, process, or use of natural resources. This is the meaning often invoked in management regimes such as the Magnuson-Stevens Fishery Conservation and Management Act, which limits harvest of fisheries to the “maximum sustainable yield” (16 U.S.C. xx 1801–1884).

In contrast, “sustainable development” reflects a broader societal goal of how economic and social development should proceed—namely, with sufficient consideration of the environment and natural resources to assure the continuing availability of natural capital and other ecological amenities. The international community embraced sustainable development at the 1992 UN Conference on Environment and Development in Rio de Janeiro, incorporating it into both the Rio Declaration and Agenda 21.

The pursuit of sustainable development has occurred in an emerging climate change era. The pursuit of sustainable development goals, however, has not resulted in effective mitigation of climate change. Greenhouse gas emissions have continued to increase, and SESs must now adapt to climate change's impacts. Resource consumption patterns have proceeded since 1992 on similar trends in terms of pace and scale. In anticipation of Rio+20, the UN Environment Programme (UNEP) released a report that Executive Director Achim Steiner summarized by stating, “If current patterns of production and consumption of natural resources prevail and cannot be reversed and ‘decoupled,’ then governments will preside over unprecedented levels of damage and degradation” (UNEP 2012b). The report emphasized the increasingly likely possibility of large-scale irreversible change, concluding that as human pressures on the Earth system accelerate, critical global, regional, and local thresholds are quickly being approached or, in some cases, have already been exceeded (UNEP 2012a).

Despite this alarming and unpredictable situation, policy discussions remain framed by the goal of sustainability. This adherence to sustainability ignores the fact that the concept has failed to meaningfully change the human behavior that created the Anthropocene. We are losing in the struggle to sustainably govern the commons (Dietz, Ostrom, and Stern 2003).

Sustain What?

It's not that sustainability is a bad idea. It remains valuable as an overarching principle for the broadest of global ecological ideals: leaving a living planet to future generations. The issue raised here is whether the concept of sustainability is still

useful as an environmental governance goal. By definition, sustainability assumes that there are desirable states of being for SESs that humans can maintain (within a certain range of variability) indefinitely. In practice, sustainability-based goals proved difficult to achieve in many SESs even before climate change impacts became noticeable. Fisheries management, for example, has long been challenged by the difficulties of obtaining accurate estimates of fish stocks, unacknowledged yearly or longer variability in fish stocks, and often intense political pressure to allow fishers to fish. The result has been collapsed, collapsing, and overfished stocks the world over. Imagine how much more difficult it will be to define—let alone to achieve—“sustainable fishing” when important fish stocks are changing their ranges, migratory patterns, and population numbers in response to rising global average sea temperatures, ocean acidification, sea-level rise, changing ocean currents, and attendant changes in marine food webs. Future management of other natural resources faces similar challenges. What constitutes sustainable use of water in a given region when we no longer can trust historical rainfall, snowfall, and snow-melt patterns? How much water pollution is “too much” when the historic flows and other ecological conditions (e.g., temperature, chemical activity) of rivers, even major rivers, are changing? We face a future that requires us to admit that we have no idea what we can sustain (Milly et al. 2008).

Is Resilience a More Useful Way to Frame the Challenges Ahead?

We must begin to formulate ecological governance goals by some metric other than sustainability to conceptualize the management situations we face. The concept of resilience holds promise as new way of addressing the challenges ahead. While not inherently incompatible concepts, resilience and sustainability are not the same. The pursuit of sustainability inherently assumes that we (a) know what can be sustained and (b) have the capacity to hold onto some type of stationarity and/or equilibrium. In contrast, resilience thinking acknowledges disequilibrium and nonlinear change in SESs. Resilience can be characterized in three ways: (1) the amount of change the system can undergo and still retain the same controls on function and structure; (2) the degree to which the system is capable of self-organization; and (3) the ability to build and increase the capacity for learning and adaptation (Carpenter et al. 2001). The dynamics and complexities of SESs are embraced, certainty is not required, and the emphasis is on adaptive capacity and adaptive management rather than stationarity.

One critical component of a resilience orientation is the recognition that regime shifts can and will occur. As a result, a resilience orientation allows for a more realistic approach to management—especially in the Anthropocene—because it acknowledges nonlinear change and provides a way of thinking about how to foster the SES

components and dynamics we value and want to protect. The identification and, generally, avoidance of critical thresholds become important management goals. Resilience thinking also offers a theoretical framework for assessing cross-scale dynamics, a facet of SESs that will become increasingly important given current rates of globalization and increasingly complex socioecological challenges. Consider, for example, the complex and interlinked relationships among global fisheries, offshore aquaculture, increasing coastal populations and associated land-based coastal pollution and loss of coastal habitat, changing ocean currents and temperatures, ocean acidification, national concerns with food security, global trade regimes, and international human rights regimes (Gunderson 2002).

Shifting the governance focus from sustainability to resilience is not admitting defeat. Instead, a resilience approach would reorient current research and policy efforts toward coping with change instead of increasingly futile efforts to maintain existing states of being. It would, for example, place increased emphasis on developing climate adaptation strategies. Similarly, research to develop baseline data retains importance moving forward—but not as a guide toward what we can “sustain.” Instead, such research would seek to locate historical tipping points that might provide insight into future regime change and help to identify critical ecological thresholds.

Another important aspect of resilience thinking is that a state of “system resilience” is not inherently good or bad. Human values will continue to dictate decisions regarding which system states we want to foster through governance and management regimes, and these values include considerations of equity. One of sustainability’s major contributions to environmental governance was its emphasis on both intra- and intergenerational equity. Resilience thinking has the potential to be more helpful than sustainability in this regard, because it requires a more transparent examination of social justice and other human development concerns through an assessment of not only which elements of an SES we value but also the extent to which those values are reflected in our policies and approaches. By contrast, sustainability discourse has morphed into an unhelpful “we can have it all” assumption about socioecological management based on green consumerism (Parr 2009).

Resilience thinking is at a critical stage, in terms of both its theoretical development and its practical application. From a theoretical perspective, important questions have been raised regarding whether the Holling school’s construct of ecological resilience is appropriate for understanding social system dynamics (Davidson 2010). This has provoked a respectful yet spirited discussion in this journal related to the progression of the literature and its integration with related work in the social sciences (Davidson 2013; Ross and Berkes 2013). We agree with Davidson that without more careful attendance to the role of human agency and capital, resilience will fail to capture the complexities and dynamics of social systems. As a result, resilience is then in danger of being dismissed by critics who claim resilience theory is yet another tool of neoliberalism (Pelling 2011; Walker and Cooper 2011).

On a practical level, the concept of resilience is already gaining the attention of natural resource managers and policymakers (Benson and Garmestani 2011). In its current stage of integration and development, however, resilience is in danger of becoming—like sustainability—a rhetorical device with little influence on actual decision making. We are at a critical point with regard to the challenge of integrating resilience thinking into environmental policies and approaches. Adaptive governance and adaptive management offer promise in terms of putting resilience thinking into practice, but, to date, these ideas have not yet been integrated into legal and regulatory frameworks in enforceable ways. Key elements, currently lacking in many resilience-based approaches, are the mechanisms needed to provide the necessary accountability to ensure that adaptive approaches will actually work. Future environmental management will require principled flexibility (Craig 2010). Discussions among scientists, policymakers, and others are needed to design and implement environmental policies that promote and build adaptive capacity while also providing stronger, more legally enforceable, and institutionally supported goals—goals that reflect the adaptation strategies necessary to anticipate and negotiate the complex, nonlinear, and rapidly changing world.

The time has come to move past the concept of sustainability. As an environmental management goal, sustainability is no longer appropriate, and it cannot be used to meaningfully address the challenges ahead. In order to reflect the scientific realities of the Anthropocene, new policies and institutions must be developed that accommodate uncertainty and anticipate nonlinear alterations of SESs. The future demands a more adaptive yet principled approach to continual change.

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SUSTAINABILITY vs. RESILIENCE

WILLIAM E. REES*

[Editors' note: William E. Rees, who originated the "ecological footprint" concept, wrote this note as a rejoinder to Chapter 18, "The End of Sustainability" by Benson and Craig.]

In my opinion this article is poorly reasoned, and mis-represents (misunderstands?) both sustainability and resilience. Two sample quotes to illustrate (ignoring for a moment that the authors use a questionable definition/understanding of sustainability):

- 1) *"Policy discussions remain framed by the goal of sustainability, ignoring the fact that the concept has failed to meaningfully change human behavior."*

So, the failure of corporate and government elites to operate in the broader long-term public interest is reason to abandon sustainability? This is analogous (well, almost) to giving up laws on drug trafficking because they don't meaningfully change the behavior of the criminally inclined.

- 2) *"...resilience and sustainability are not the same. The pursuit of sustainability assumes that we a) know what can be sustained and b) have the capacity to maintain stationarity (i.e., keep the system operating within an unchanging envelope of variability). In contrast, resilience thinking*

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acknowledges disequilibrium and nonlinear, continual change—often as a result of crossing a “tipping point” or threshold—and offers a tool for assessing the dynamic relationships between systems...”

There are at least two problems here.

- i) Since when has sustainability been associated with “stationarity” even if the latter is defined (contradictorily?) as “...operating within an unchanging envelope of variability”? A sustainable system (e.g., your body, a natural ecosystem) can be as dynamic overall as any other system, even while key variables—body temperature, for example—operate within a relatively narrow “envelop of variability”. A steady-state economy could theoretically be both sustainable and dynamic, constantly evolving and improving technologically and socially, hardly the image called up by “stationarity”.
- ii) It is true that resilience “acknowledges disequilibrium and nonlinear, continual change—often as a result of crossing a ‘tipping point’ or threshold”. However, the point is to recognize that the behavioral domain on the other side of the tipping point is an “unknown unknown”. This is previously unexplored territory that may not be compatible with human needs or even continued human existence.

Consider the collapse of North Atlantic cod stocks. The latter were fished past a tipping point from which they have yet to return (The fishery was suspended in 1992). Had cod-dependent Newfoundland fishing communities not been bailed out by the Canadian federal government, they too would have collapsed. In short, resilience theory tells us that complex systems have many possible ‘domains of stability’ (or ‘strange attractors’) in addition to those to which human societies have historically adapted. The North Atlantic cod ecosystem occupied one such stability domain for centuries and tolerated ever-increasing fishing pressure by the fleets of many nations. The introduction of modern high-capacity factory-freezer trawlers seems to have been a critical step, one that pushed the exploited ecosystem across the threshold into a different structural configuration. This famous case shows that crossing a tipping point poses unknown hazards that may prove costly or even fatal to the human component of the combined socioeconomic system (SES). The overall system may be complex and adaptive—the cod are not extinct—but the newly-configured post-threshold system’s structure may not include *H. sapiens* (and returning to accustomed ‘norms’ may not be possible).

These realities suggest that wise managers will try to avoid crossing tipping points whenever possible; they should attempt to maintain the system within a familiar range of variability but be ready for drastic adaptation if excess human exploitation

drives the system beyond some threshold or the system's natural developmental cycle takes it there. From this perspective, sustainability implies avoiding critical boundaries and maintaining the combined SES within its historically viable stability domain, i.e., an operating range compatible with reasonable human demands.

Resilience then becomes a theoretical construct for sustainability that: a) guides against breaching unknown systems boundaries; b) suggests that continuous changes in certain driving variables is inherently dangerous (e.g., continuously increasing fishing pressure, escalating GHG emissions, or constant material growth) and; c) warns that surviving the breach of a major tipping point, whether human induced or natural, will require unprecedented levels of investment, cooperation and other forms of institutional and societal adaptation. Human-induced climate change will almost certainly validate all these assertions.

In short, resilience thinking is a complement to sustainability, not a substitute.

SUSTAINABILITY IS NOT ENOUGH: WE NEED REGENERATIVE CULTURES

DANIEL C. WAHL*

Sustainability alone is not an adequate goal. The word sustainability itself is inadequate, as it does not tell us what we are actually trying to sustain. In 2005, after spending two years working on my doctoral thesis on design for sustainability, I began to realize that what we are actually trying to sustain is the underlying pattern of health, resilience and adaptability that maintain this planet in a condition where life as a whole can flourish. Design for sustainability is, ultimately, design for human and planetary health (Wahl, 2006b).

A regenerative human culture is healthy, resilient and adaptable; it cares for the planet and it cares for life in the awareness that this is the most effective way to create a thriving future for all of humanity. The concept of resilience is closely related to health, as it describes the ability to recover basic vital functions and bounce back from any kind of temporary breakdown or crisis. When we aim for sustainability from a systemic perspective, we are trying to sustain the pattern that connects and strengthens the whole system. Sustainability is first and foremost about systemic health and resilience at different scales, from local, to regional and global.

Complexity science can teach us that as participants in a complex dynamic eco-psycho-social system that is subject to certain biophysical limits, our goal has to be appropriate participation, not prediction and control (Goodwin, 1999a). The best way to learn how to participate appropriately is to pay more attention to

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systemic relationships and interactions, to aim to support the resilience and health of the whole system, to foster diversity and redundancies at multiple scales, and to facilitate positive emergence through paying attention to the quality of connections and information flows in the system. This book explores *how* this might be done.

Using the Precautionary Principle

One proposal for guiding wise action in the face of dynamic complexity and ‘not knowing’ is to apply the *Precautionary Principle* as a framework that aims to avoid, as far as possible, actions that will negatively impact on environmental and human health in the future. From the United Nation’s ‘World Charter for Nature’ in 1982, to the Montreal Protocol on Health in 1987, to the Rio Declaration in 1992, the Kyoto Protocol, and Rio+20 in 2012, we have committed to applying the Precautionary Principle over and over again.

The Wingspread Consensus Statement on the Precautionary Principle states: “When an activity raises threats of harm to human health or the environment, precautionary measures should be taken even if some cause and effect relationships are not fully established scientifically” (Wingspread Statement, 1998). The principle puts the burden of proof that a certain action is not harmful on those proposing and taking the action, yet general practice continues to allow all actions that have not (yet!) been proven to have potentially harmful effects to go ahead unscrutinized. In a nutshell, the Precautionary Principle can be summarized as follows: practice precaution in the face of uncertainty. This is *not* what we are doing.

While high-level UN groups and many national governments have repeatedly considered the Precautionary Principle as a wise way to guide actions, day-to-day practice shows that it is very hard to implement, as there will always be some degree of uncertainty. The Precautionary Principle could also potentially stop sustainable innovation and block potentially highly beneficial new technologies on the basis that it cannot be proven with certainty that these technologies will not result in unexpected future side-effects that could be detrimental to human or environmental health.

Why Not Challenge Designers, Technologists, Policy-makers, and Planning Professionals to Evaluate Their Proposed Actions on Their Positive, Life-sustaining, Restorative and Regenerative Potential? Why Not Limit the Scale of Implementation of Any Innovation to Local and Regional Levels Until Proof of Its Positive Impact Is Unequivocally Demonstrated?

Aiming to design for systemic health may not save us from unexpected side-effects and uncertainty, but it offers a trial and error path towards a regenerative culture.

We urgently need a Hippocratic Oath for design, technology and planning: do no harm! To make this ethical imperative operational we need a salutogenic (health generating) intention behind all design, technology and planning: *We need to design for human, ecosystems and planetary health.* This way we can move more swiftly from the unsustainable ‘business as usual’ to restorative and regenerative innovations that will support the transition towards a regenerative culture. Let us ask ourselves:

How Do We Create Design, Technology, Planning and Policy Decisions That Positively Support Human, Community and Environmental Health?

We need to respond to the fact that human activity over the last centuries and millennia has done damage to healthy ecosystems functioning. Resource availability is declining globally, while demand is rising as the human population continues to expand and we continue to erode ecosystems functions through irresponsible design and lifestyles of unbridled consumption.

If we meet the challenge of decreasing demand and consumption globally while replenishing resources through regenerative design and technology, we have a chance of making it through the eye of the needle and creating a regenerative human civilization. This shift will entail a transformation of the material resource basis of our civilization, away from fossil resources and towards renewably regenerated biological resources, along with a radical increase in resource productivity and recycling. Bill Reed has mapped out some of the essential shifts that will be needed to create a truly regenerative culture.

Instead of doing less damage to the environment, it is necessary to learn how we can participate with the environment—using the health of ecological systems as a basis for design. [...] The shift from a fragmented worldview to a whole systems mental model is the significant leap our culture must make—framing and understanding living system interrelationships in an integrated way. A place-based approach is one way to achieve this understanding. [...] Our role, as designers and stakeholders is to shift our relationship to one that creates a whole system of mutually beneficial relationships.

(2007: 674)

Reed named ‘whole-systems thinking’ and ‘living-systems thinking’ as the foundations of the shift in mental model that we need to create a regenerative culture. In Chapters 3, 4 and 5, we will explore these necessary shifts in perspective in some detail. They go hand- in-hand with a radical reframing of our understanding of sustainability. As Bill Reed puts it:

Sustainability is a progression towards a functional awareness that all things are connected; that the systems of commerce, building, society, geology, and nature are really one system of integrated relationships; that these systems are co-participants in the evolution of life

(2007)

Once we make this shift in perspective we can understand life as “a whole process of continuous evolution towards richer, more diverse, and mutually beneficial relationships”. Creating regenerative systems is not simply a technical, economic, ecological or social shift: it has to go hand-in-hand with an underlying shift in the way we think about ourselves, our relationships with each other and with life as a whole.

....The aim of creating regenerative cultures transcends and includes sustainability. *Restorative design* aims to restore healthy self-regulation to local ecosystems, and *reconciliatory design* takes the additional step of making explicit humanity's participatory involvement in life's processes and the unity of nature and culture. *Regenerative design* creates regenerative cultures capable of continuous learning and transformation in response to, and anticipation of, inevitable change. Regenerative cultures safeguard and grow biocultural abundance for future generations of humanity and for life as a whole.

The ‘story of separation’ is reaching the limits of its usefulness and the negative effects of the associated worldview and resulting behavior are beginning to impact on life as a whole. By having become a threat to planetary health we are learning to rediscover our intimate relationship with all of life. Bill Reed's vision of regenerative design for systemic health is in line with the pioneering work of people like Patrick Geddes, Aldo Leopold, Lewis Mumford, Buckminster Fuller, Ian McHarg, E.F. Schumacher, John Todd, John Tillman Lyle, David Orr, Bill Mollison, David Holmgren, and many others who have explored design in the context of the health of the whole system.

A new cultural narrative is emerging, capable of birthing and informing a truly regenerative human culture. We do not yet know all the details of how exactly this culture will manifest, nor do we know all the details of how we might get from the current ‘world in crisis’ situation to that thriving future of a regenerative culture. Yet aspects of this future are already with us.

In using the language of ‘old story’ and ‘new story’ we are in danger of thinking of this cultural transformation as a replacement of the old story by a new story. Such separation into dualistic opposites is in itself part of the ‘separation narrative’ of the ‘old story’. The ‘new story’ is not a complete negation of the currently dominant worldview. It includes this perspective but stops regarding it as the only perspective, opening up to the validity and necessity of multiple ways of knowing.

Embracing uncertainty and ambiguity makes us value multiple perspectives on our appropriate participation in complexity. These are perspectives that give value

and validity not only to the 'old story' of separation, but also to the 'ancient story' of unity with the Earth and the cosmos. These are perspectives that may help us find a regenerative way of being human in deep intimacy, reciprocity and communion with life as a whole by becoming conscious co-creators of humanity's 'new story'.

Our impatience and urgency to jump to answers, solutions and conclusions too quickly is understandable in the face of increasing individual, collective, social, cultural and ecological suffering, but this tendency to favor answers rather than to deepen into the questions is in itself part of the old story of separation.

The art of transformative cultural innovation is to a large extent about making our peace with 'not knowing' and living into the questions more deeply, making sure we are asking the right questions, paying attention to our relationships and how we all bring forth a world not just through what we are doing, but through the quality of our being. A regenerative culture will emerge out of finding *and living* new ways of relating to self, community and to life as a whole. At the core of creating regenerative cultures is an invitation to *live the questions together*.



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PART FIVE

FROM ECOLOGICAL CONFLICT TO ENVIRONMENTAL SECURITY?



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THE CONCEPT OF SUSTAINABILITY, AS ILLUSTRATED IN THE PREVIOUS SECTION, HAS emerged as a powerful paradigm shaping the interpretations, goals, and behavior of many actors on the global environmental stage. But global environmental challenges raise questions not only about production, consumption, and livelihoods but also about conflict, violence, and geopolitics. The control of natural resources is also a highly contested political issue, and one that can trigger violence on scales ranging from a local watershed to an entire nation or beyond. It is not surprising, therefore, that paradigms focused on the peace-and-conflict dimensions of environmental problems also have emerged.

One attempt to grapple with these intensely political themes is the paradigm of “environmental security.” Like sustainability, environmental security offers a potentially powerful but also controversial way to think about the social dimensions of environmental problems. The paradigm rests on a series of claims: that environmental change is an important source of social, and perhaps even violent, conflict; that many societies face grave dangers from environmental change, arguably outstripping traditional military threats as a source of insecurity; and that both environmental and security policies must be redefined to take account of these new realities. We saw an early articulation of this position from Lester Brown, writing in the 1970s, in Part One.

We begin this section with Geoffrey Dabelko’s overview of the historical roots of the environmental security paradigm (Chapter 21). This multidimensional story illustrates the diversity of the paradigm’s origins and areas of focus. It also highlights the difficulties of placing environmental security concerns on the international agenda and keeping them there. Looking to the future, Dabelko points hopefully toward the emergence of a new generation of more careful analytic scholarship and growing recognition of the peacebuilding potential inherent in environmental relationships, as opposed to a narrower view of the environment as simply a potential trigger for conflict. His chapter also highlights the strong influence of the movement of environmental security ideas across borders as the paradigm has evolved and grown.

Chapter 22, excerpted from the United Nations report *From Conflict to Peacebuilding*, characterizes a diverse set of connections among environmental change, natural-resource use, and violent conflict. Prepared by the UN Environment Programme (UNEP) as a “policy justification” for its activities, the excerpt presented here outlines pathways forward for practitioners to respond

to the complex set of dynamics associated with the environment, violence, and peacebuilding. Scholars concerned with an environment-conflict link initially focused their attention largely on problems of increasing natural-resource scarcity. Beginning in the early 1990s, a growing body of research suggested that scarcity of renewable resources—principally water, fish stocks, forests, and fertile land—could contribute to social instability, civil strife, and violent conflict, particularly when coupled with population growth and inequitable division of resources.¹ As research progressed, however, it became apparent that there was also violence potential in resource abundance. Abundance may have several destabilizing consequences: it can create incentives for actors to capture “lootable” resources; it may provide combatants with a steady stream of revenues and a disincentive to end ongoing conflicts; and it may promote distorted patterns of economic development which can, in turn, yield weak and brittle governments.² UNEP’s analysis suggests that both scarcity and abundance may trigger violent conflict, particularly in the context of weak, illegitimate, or predatory political institutions. These mechanisms may originate in the grievances of local communities or when “violence entrepreneurs” exploit real or perceived scarcities between groups. UNEP also works on post-conflict peacebuilding, and has produced a series of post-conflict assessments of the environmental challenges facing war-torn societies.³

Given such conflict risks, some proponents of environmental security have argued that there is an urgent, compelling need to “redefine” the concept of security.⁴ In this view, environmental security is more than just an effort to explain new threats or document empirical patterns of environmental degradation and violence. It is also a political agenda aimed at mobilizing the state and society toward a new set of goals and at redirecting resources and energies away from traditional, narrowly military concerns. Some proponents argue that only by framing the environmental problematique in security terms can the necessary level of governmental attention and social mobilization be ensured.⁵ Others argue that security institutions could contribute directly to environmental protection, given their financial resources, monitoring and intelligence-gathering capabilities, and scientific and technological expertise.⁶

Thus, although the origins of the environmental security paradigm can be traced at least to the early post-World War II period,⁷ it is surely no accident that the idea of rethinking security policy in ecological terms flourished in the post-Cold War era. Policy makers, military institutions, and entire societies began to reconsider the character of the threats they face. Many proponents of environmental security were driven by the belief that the end of the Cold War opened a window of opportunity for fundamental changes in security policies and a reordering of social priorities. More recently, we are seeing a similar set of arguments around the specific question of climate change.⁸

Among the many controversies surrounding the paradigm of environmental security, two are central. First, is there enough evidence to support the claim that ecological change is, or will be, a major new source of conflict? Although researchers have documented many cases in which environmental change has played a role in promoting or exacerbating social conflict, many questions remain. Why does environmental stress produce such conflict in some cases but not in others? Is it possible that environmental problems are a symptom of conflict-prone social systems rather than a root cause of conflict? As Francesca de Châtel documents in Chapter 23, the disastrous civil conflict in Syria demonstrates how difficult it is to tease out the causal signature of environmental factors—in this case, water shortages triggered by multiyear drought. Some observers have dubbed conflict episodes such as Syria and the equally calamitous conflicts in Sudan during the 2000s as the first “climate-change wars” given the seeming role of drought; others have energetically rejected this premise, laying the blame on political and economic factors and cautioning that blaming nature has the effect of absolving social actors, including bad governments, from the consequences of their choices.⁹ De Châtel provides a carefully detailed account that illustrates how water shortages, while being part of the story, must be understood in the context of historical patterns of social inequality and problematic state policies.

A second set of questions about the paradigm engages the contested concept of security and the risks of “securitizing” a policy issue. Are the advantages of linking environmental problems to security concerns worth the risk of militarizing a society’s responses to environmental problems? One early skeptic, Daniel Deudney, cautioned that environmental problems have little in common with the traditional security problem of interstate violence. Deudney also expressed wariness about the seductive idea of using powerful security imagery to mobilize society: “For environmentalists to dress their programs in the blood-soaked garments of the war system betrays their core values and creates confusion about the real tasks at hand.”¹⁰ Others have worried about more than simply conceptual confusion, noting that the consequences of framing environmental problems as security threats may be to narrow the menu of options, downgrade cooperative opportunities, propagate a problematic zero-sum logic, or bring the wrong actors to the table.¹¹

Such critiques have found particular resonance among governments and peoples across the global South. Many have viewed the North’s concern for “security” in the South, environmental or otherwise, with skepticism if not outright suspicion. They see the rhetoric of environmental security as an excuse to continue the North’s long-standing practice of military and economic intervention, while also providing a way for the North to deny its own overwhelming responsibility for the deteriorating state of the planet. Calls for changes in security policies may seem like a way to break the cycle of violence, suspicion, and zero-sum thinking; but given the purposes that security policies have served in the past, such calls also raise deep

suspicious about ulterior motives. Small island states, facing an existential threat from climate change, have increasingly employed the security frame to call attention to a fundamental threat not of their making, creating some diversity in the ways environmental security is perceived within the global South.

There is also the danger that stressing environment-conflict linkages tell only part of the story. If tensions over environment and natural resources can trigger conflict, may they not also trigger cooperation? If actors recognize the conflict potential, might they not work to enhance capacities for peaceful dispute resolution, using the need to cooperate as a way to build confidence and trust? Arguably these dynamics have been the case with regard to water, a resource around which there are many social tensions—but also many initiatives for cooperation, institution building, and shared resource governance. It would be a mistake to view only the conflictual side of social responses. According to Kader Asmal, the senior South African government official who chaired the innovative stakeholder dialogue process known as the World Commission on Dams, for all the gloom-and-doom talk from politicians and journalists about water scarcity triggering “water wars” in the near future, the historical record around water has overwhelmingly been one of cooperation and negotiation, not conflict and violence:

With all due respect to my friends, have battles been fought over water? Is water scarcity a *casus belli*? Does it in fact divide nations? My own answer is no, no and no. I recognize the obvious value to sensational “Water War.” Alarmists awaken people to the underlying reality of water scarcity, and rally troops to become more progressive and interdependent. By contrast, to challenge or dispute that rhetoric is to risk making us passive or smug about the status quo, or delay badly needed innovations or co-operation against stress. And yet I do challenge “Water War” rhetoric. For there is no hard evidence to back it up.¹²

There is indeed little evidence for historic episodes of war between countries over water, as well as emerging evidence that water issues can be a force for cooperation, even in the face of wider conflict. Chapter 24 presents an excerpt from a report by EcoPeace, outlining how that Middle East regional civil-society organization has sought to use environmental interdependencies to build trust between parties to conflict. EcoPeace’s Good Water Neighbors project has brought together Israeli, Palestinian, and Jordanian communities living side by side and suffering jointly from poor water quality. Partnering with schools and mayors, EcoPeace has worked to improve water quality, hygiene, and access in ways that bring communities and leaders together to cooperate on a wider agenda despite the ongoing conflict. They then proactively build on this local cooperation to support cooperation at higher levels of political organization while serving as a model for other potential environmental peacebuilders around the world. While such initiatives

have obviously not transformed the structure of the Israeli–Palestinian conflict, they provide hope and, possibly, a foundation on which to build. A growing body of research on “environmental peacebuilding” has examined both the promise and limits of such opportunities.¹³

We conclude this section with a chapter that highlights a very different form of environmental violence: the assassination, intimidation, and other forms of violence directed at those who call attention to environmental problems. The activist organization Global Witness tracks such episodes, and in 2014 published a report documenting the shocking extent of the problem; we present the report’s executive summary in Chapter 25. The work of Global Witness and others reminds us that, for tens of millions of people around the world, a very immediate “security” issue is the “structural violence” of forced displacement and loss of livelihoods, to make way for large dams, agricultural colonization schemes, mines, oil fields, and other large-scale resource development projects. This critique suggests that the environmental security frame must be broadened to encompass human security concerns, rather than simply the question of interstate or intergroup violent conflict. Part Six, on the concept of ecological justice, will take up these concerns centrally.

Social science may lack the tools to tell us exactly when and where environmental problems may produce violence. Nevertheless, the capacity of environmental change to disrupt people’s lives, erode standards of living, and threaten established interests tells us that the possibility of widespread violent conflict must be taken seriously. The paradigm of environmental security remains controversial because it links plausible claims about conflict to the symbolically powerful and highly charged concept of security. At best, linking environment and security could be a way to build trust among nations and make security a cooperative, global endeavor, while at the same time steering resources and public energy toward resolving environmental problems. At worst, tying environmental concerns to militarized approaches to social conflict could undercut environmental cooperation or itself be a recipe for greater violence. Research that helps us understand when and where such conflict is likely to occur would be an important tool for avoiding conflict, building international confidence, and resolving conflicts without resort to violence.

Thinking Critically

1. What are the different strands of environmental security outlined in Dabelko’s “Uncommon Peace” essay? Why do you think some dimensions dominate today’s environmental security debates, while others get less attention? Which issues deserve the most attention in the current debate?
2. Can you think of examples that run counter to the environmental conflict argument—that is, cases where the conditions for environmentally

induced violent conflict seem to exist but violence does not occur? What social institutions or other conditions are likely to influence whether violence occurs? Is the connection between environment and conflict solely a problem for the poorer regions of the world?

3. Which seems more likely in the present international political climate: the “greening” of security policy or the militarization of environmental policy?
4. Do you think the UN Security Council is an appropriate forum for debating climate change and security links? What, if anything, could the Council actually do?
5. Can you think of other places where the “Good Water Neighbors” peace-building strategy could be tried at the local level? How would you launch and develop such cooperation in areas of conflict, as a way to build trust or lessen tensions? Are there certain settings, scales, or types of conflict to which it may be more or less applicable?
6. Might environmental cooperation also cause environmental conflict? If countries in a shared river basin agree to build a dam instead of fighting over the water, is that “environmental peacebuilding” or merely a shifting of violence from interstate affairs onto local communities in the basin? Is it possible to develop strategies that work for peace on both levels at once?

NOTES

1. See, for example, Thomas Homer-Dixon, “Environmental Scarcities and Violent Conflict: Evidence from Cases,” *International Security* vol. 19 no. 1 (1994): 5–40; Günther Bächler, *Violence through Environmental Discrimination* (Dordrecht, The Netherlands: Kluwer, 1999).

2. For an overview of this literature, see Michael L. Ross, *The Oil Curse* (Princeton, NJ: Princeton University Press, 2012).

3. See the disasters and conflicts branch of the UN Environment Programme, <https://www.unenvironment.org/explore-topics/disasters-conflicts>

4. For early exemplars of this view, see Jessica Tuchman Mathews, “Redefining Security,” *Foreign Affairs* 67 (1989): 162–177; Norman Myers, “Environment and Security,” *Foreign Policy* 74 (Spring 1989): 23–41; and Chapter 4 of this volume, by Lester Brown.

5. Former US Vice President Al Gore discusses this theme in his first book on the global environment, *Earth in the Balance: Ecology and the Human Spirit* (New York: Houghton Mifflin, 1992).

6. See various issues of the *Environmental Change and Security Program Report*, published by the Washington-based Woodrow Wilson International Center for Scholars (<http://www.wilsoncenter.org/ecsp>).

7. Early examples include Fairfield Osborn, *Our Plundered Planet* (Boston, MA: Little, Brown, 1953); and Harrison Brown, *The Challenge of Man's Future* (New York: Viking, 1954).

8. Matt McDonald, "Discourses of Climate Security," *Political Geography* 33 (2013): 42–51.

9. For a range of views in this debate, see Jon Barnett and Neil Adger, "Climate Change, Human Security, and Violent Conflict," *Political Geography* 26 (2007): 639–655; Peter Gleick, "Water, Drought, Climate Change, and Conflict in Syria," *Weather, Climate and Society* vol. 6 no. 3 (2014): 331–340; Collin Kelley et al., "Climate Change in the Fertile Crescent and Implications of the Recent Syrian Drought," *Proceedings of the National Academy of Sciences* vol. 112 no. 11 (2015): 3241–3246; Caitlin Werrell et al., "Did We See It Coming? State Fragility, Climate Vulnerability, and the Uprisings in Syria and Egypt," *SAIS Review* vol. 35 no. 1 (2015): 29–46; and Jan Selby, Omar Dahl, Christiane Fröhlich, and Mike Hulme, "Climate Change and the Syrian Civil War Revisited," *Political Geography* 60 (2017): 232–244.

10. Daniel Deudney, "The Case Against Linking Environmental Degradation and National Security," *Millennium* 10 (1990): 461–476.

11. Michael Brzoska, "The Securitization of Climate Change and the Power of Conceptions of Security," *Security and Peace* 3 (2009): 137–145; M. Schäfer, J. Scheffran, and L. Penniket, "Securitization of Media Reporting on Climate Change? A Cross-national Analysis in Nine Countries," *Security Dialogue* vol. 47 no. 1 (2016): 76–96; M. Trombetta, "Linking Climate-induced Migration and Security within the EU: Insights from the Securitization Debate," *Critical Studies on Security* vol. 2 no. 2 (2014): 131–147. For early critiques see for example, Ken Conca, "In the Name of Sustainability: Peace Studies and Environmental Discourse," *Peace and Change* vol. 19 no. 2 (April 1994): 91–113; and Jyrki Käkönen, ed., *Green Security or Militarized Environment* (Aldershot, UK: Dartmouth Publishing, 1994).

12. Kader Asmal, Speech to the 10th Stockholm Water Symposium, Stockholm, Sweden, August 14, 2000.

13. See, for example, Ken Conca and Geoffrey D. Dabelko, eds., *Environmental Peacemaking* (Washington, DC, and Baltimore, MD: Woodrow Wilson Center Press and Johns Hopkins University Press, 2002); Ashok Swain and Joakim Öjendal, eds., *Routledge Handbook of Environmental Conflict and Peacebuilding* (New York: Routledge, 2018).

AN UNCOMMON PEACE: ENVIRONMENT, DEVELOPMENT, AND THE GLOBAL SECURITY AGENDA

GEOFFREY D. DABELKO*

In 1988, nuclear war was “undoubtedly the gravest” threat facing the environment, according to *Our Common Future*, commonly known as the Brundtland report.¹ The possible environmental consequences of thermonuclear war—radioactive contamination, nuclear winter, and genetic mutations—were widely feared during the Cold War, especially by citizens of the United States and Soviet Union, which the report called “prisoners of their own arms race.”²

Thankfully, these nightmare scenarios did not come to pass. . . . However, in the 20 years since the report’s publication, the specter of nuclear destruction has not yet been “removed from the face of the Earth,”³ as the report called for, but has merely changed scale: the threat of the mushroom cloud has been replaced by the threat of the dirty bomb—a crude device that a terrorist cell could fashion out of pilfered nuclear material. Setting off such a bomb in a world city—a major hub in the global economy—could create more disruption than the paradigm-shifting attacks of September 11, 2001, although the radioactivity would impact far fewer people than the feared global nuclear winter of old.

Since the end of the Cold War in 1989, the security community’s focus has shifted from the global clash of superpowers to fragmented groups of stateless actors

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fomenting civil war and terrorism. The end of the Cold War also opened greater political space for analyzing a range of diverse threats to both individuals and the world beyond using the traditional state-centered approach. The environment—along with the related challenges of health and poverty—has become a key area of focus within that new space.

Our understanding of the links between environment and security has evolved in the last 20 years to reflect these changing threat scenarios. Today, “environmental security” has become a popular phrase used to encompass everything from oil exploration to pollution controls to corn subsidies. The Brundtland report, in an underappreciated chapter entitled “Peace, Security, Development, and the Environment,” set the agenda for understanding these multiple links between environment and security. . . .

Redefining Security in *Our Common Future*

Our Common Future, produced by the World Commission on Environment and Development (WCED), is best known for its definition of sustainable development.⁴ Yet the so-called Brundtland Commission, named after its chair, former Norwegian Prime Minister Gro Harlem Brundtland, also called for a broader conception of security that included instability caused in part by environmental factors. Conflict, attendant military spending, and the ultimate threat of nuclear exchange were highlighted as direct and indirect impediments to achieving sustainable development. As was to become the habit of many subsequent environmental security advocates, *Our Common Future* called for fundamentally broadening security definitions to accommodate these wider threats while simultaneously employing environment and conflict arguments that fell comfortably within the traditional confines of security.⁵

In the introductory chapter, the commissioners stated, “The whole notion of security as traditionally understood—in terms of political and military threats to national sovereignty—must be expanded to include the growing impacts of environmental stress—locally, nationally, regionally, and globally.”⁶ While acknowledging these linkages were “poorly understood,” the commission held that “a comprehensive approach to international and national security must transcend the traditional emphasis on military power and armed competition.”⁷

While by no means the first advocate for this expanded notion of security,⁸ the Brundtland Commission was a key legitimizing voice. Its influence was felt in the United Nations Development Programme’s (UNDP) “human security” frame, which gained traction in UN forums and was championed by select national leaders such as Canada’s Foreign Minister Lloyd Axworthy.⁹ Even as it called for altering the security paradigm, the Brundtland Commission made arguments firmly ensconced in a traditional statist security perspective. The report

flagged “environmental stress as both a cause and an effect of political tension and military conflict” and recognized that “environmental stress is seldom the only cause of major conflicts within or among nations” but could be “an important part of the web of causality associated with any conflict and can in some cases be catalytic.”¹⁰ The commissioners identified climate change, loss of arable land, fisheries, and water as factors likely to contribute to conflict and spur other security-related problems, such as migration and economic dislocation. It also highlighted poverty, inequality, and lost development opportunities as key factors in creating insecurity. However, these factors were not consistently addressed in the early research on environmental stress and conflict that followed in the early 1990s, possibly due to relatively low levels of developing-country participation in these research efforts. Had more researchers adopted the Brundtland Commission’s broader lens, analyses of environment-conflict links might have better integrated more robust analysis of poverty concerns and the physically remote, yet highly relevant role of international markets for natural resources.¹¹ The Brundtland Commission also identified political capacity as an important element in environment-conflict links 10 years before it was hailed “the missing ingredient” by the field’s researchers.¹² The commissioners stated that environmental stress could contribute to interstate or subnational conflict “when political processes are unable to handle the effects of environmental stress resulting, for example, from erosion and desertification.”¹³ *Our Common Future*’s focus on environment and conflict provided a legitimizing foundation for what, just a few years later, became an explosion of analytical work within and outside of governments.¹⁴ During the 20 years that followed the release of *Our Common Future*, scholarly and policy interest in the linkages it highlighted has risen, fallen, and risen again.¹⁵ . . .

No Room for Environmental Security on the Rio Agenda

The environment, peace, and security chapter of *Our Common Future* did not receive extensive formal treatment at the 1992 UN Conference on Environment and Development in Rio de Janeiro. The developing world did not endorse a global dialogue on environmental issues within the context of conflict and security, reacting negatively to formal environmental security proposals in UN forums.¹⁶ The coalition of developing nations, the Group of 77, perceived the security frame as a Pandora’s box that, once opened, could dilute their claims of absolute sovereign control over their resources. The United States was equally wary, fearing environmental issues might dilute and undermine military-focused security definitions in the midst of the Cold War. More practically, the environment, conflict, and security issues raised in *Our Common Future* did not easily lend themselves to

resolution in a multilateral environmental treaty, the preferred mechanism at Rio and of the international environmental community in general.¹⁷

The Soviet Union attempted—and failed—to institutionalize environment and security links at the United Nations prior to the Rio conference. In October 1987, in the wake of the Chernobyl accident, Mikhail Gorbachev launched his “Murmansk Initiatives” in a speech in that northern city on the Kola Peninsula.¹⁸ Calling for *glasnost* and greater cooperation (particularly among the Arctic states) in trade, environment, culture, and arms control, he proposed “ecological security” as a top global priority for both bilateral relationships and international institutions.¹⁹ While aimed at environmental challenges, the Murmansk Initiatives were a *de facto* forum for moving beyond environmental goals to broader confidence-building efforts across the Cold War divide.

Gorbachev and then-Soviet Foreign Minister Eduard Shevardnadze, in speeches to the United Nations in 1988 and 1989, proposed creating ecological security institutions because, in Shevardnadze’s words, “Overcoming the global threat to the environment and ensuring universal environmental security through prompt and effective action is an imperative of our times.”²⁰ In early May 1989, Shevardnadze called for the creation of a “UN Center for Emergency Environmental Assistance,” commonly referred to as the “Green Helmets,” to be headed by a UN undersecretary-general.

The foreign minister asked all member states to discuss this idea, in which a group of environmental experts would comprise a rapid-response force, “at a time when countries are starting preparation for a UN-sponsored conference on environment and development planned for 1992.”²¹ He also called on the UN General Assembly to create a UN Environmental Security Council. These specific proposals were predicated on the more fundamental premise that security had to be redefined: “For the first time we have understood clearly what we just guessed: that the traditional view of national and universal security based primarily on military means of defense is now totally obsolete and must be urgently revised.”²² . . .

The reaction to the Murmansk Initiatives and the subsequent UN proposals was mixed. The U.S. government response was “reserved,” perceiving the Soviet ideas as posturing and rhetoric designed to play to the developing country galleries at the UN General Assembly.²³ Environment was not yet widely linked with security in U.S. diplomatic circles, with then-U.S. Senator Al Gore one of the few politicians regularly promoting the connection.²⁴ With the concurrent collapse of communism in Central and Eastern Europe, the rest of the world glimpsed the massive toxic legacy lurking behind the Iron Curtain, which damaged the credibility of Soviet environmental decisionmaking. Shevardnadze’s 27 September 1988 call for the United States and others to transfer funds from military programs to environmental efforts echoed similar efforts in the 1970s and 1980s by the Soviets to slow or constrain NATO weapons development by promoting international environment regimes.²⁵

The Green Helmets proposal was highly unpopular with developing countries and became a political nonstarter. Countries such as Brazil feared (and continue to fear) developed-country intervention seeking to stop exploitation of natural resources such as those in the Brazilian Amazon.²⁶ The sovereign right of nonintervention was employed as an argument against the Green Helmets proposal, cutting off UN General Assembly discussion of further ecological security proposals. This dynamic repeated itself 10 years later in the UN context when then-UN Environment Programme Executive Director Klaus Toepfer reintroduced the Green Helmets idea, which was once again quickly rejected by the Group of 77 countries due to sovereignty concerns.

Environmental Security Takes Root

This failure to achieve high-profile traction on environmental security linkages at the United Nations in the 1990s did not imply a commensurate lack of interest among certain individual nations and regional organizations. The end of the Cold War did not produce the expected peace dividends, as hostilities held in check by the superpower competition were unleashed and the number of conflicts actually spiked in the 1990s. For some, such as Al Gore, by then U.S. vice president, the rise in civil conflicts—such as those in Liberia, Somalia, Rwanda, and Haiti—indicated that governments should pay greater attention to the underlying demographic, environmental, and distributional origins of these conflicts. These concerns led to a raft of analytical and policy initiatives which were prominent in, but by no means limited to, the United States.²⁷

While environmental advocates and security actors remained wary of each other's focus, means, and ends, both analysts and policymakers sought to understand these linkages. Journalist Robert Kaplan captured the policy community's attention (and fears) in his 1994 *Atlantic Monthly* article entitled "The Coming Anarchy."²⁸ Kaplan held up demographic and natural resource pressures as primary explanations for West Africa's failing states, drawing heavily on the work of peace researcher Thomas Homer-Dixon from the University of Toronto. Many critics thought Kaplan oversold the environment as the national security issue of the twenty-first century, and his claims that West Africa's fundamental challenges were widely applicable to other regions of the world provoked an analytical and policy backlash when environmental scarcity did not prove to be the ultimate threat in the post-Cold War era. Environmental security would not provide an all-encompassing alternative security paradigm. Nevertheless, the contributions of natural resource scarcity and abundance to conflict—as well as larger environmental challenges to traditional definitions of security—became institutionalized concerns for foreign, development, and security communities.

In 1994—a key year in our understanding of the links between environment, development, and security—the UNDP dedicated its annual *Human Development Report* to human security, suggesting that environmental security was one of seven areas that should constitute a new global security paradigm.²⁹ Japan, Canada, and a wide range of UN bodies now commonly use this frame, and small island states commonly invoke it to dramatize the threat to survival posed by climate change-induced sea-level rise. Although its critics bemoan its lack of precision,³⁰ human security was prominently deployed in nonenvironmental successes such as the establishment of the 1997 Convention to Ban Landmines and the International Criminal Court in 2002.

In the late 1990s, climate change and the 1997 Kyoto Protocol captured the attention of most of the global environmental community. Climate change had not featured prominently in the debates over whether the environment is a contributing cause of conflict, and it had not yet been framed as an existential global security threat. The heavy focus on the multilateral environmental treaty mechanism and the all-country negotiations to reach a global agreement was not well suited to addressing the intertwined and site-specific social, political, economic, and environmental challenges of climate change. Scholars were mired in a set of testy methodological logjams that have only begun to break up in recent years due to innovative qualitative and quantitative work. In the policy realm, program implementation suffered from the reluctance of donors to integrate conflict considerations into their anti-poverty or livelihoods efforts. At the same time, many developing countries and donors remained suspicious of environmental issues, considering them luxury items for wealthy countries rather than life-and-death livelihood problems for the world's poor. However, by the early twenty-first century, many overcame their hesitation to integrate environment, development, and conflict efforts, as evidenced by greater willingness to analyze these natural resource linkages and address them with local, field-based programs.

The reaction to the September 11 attacks certainly set back efforts to address environment and security linkages. Just as the superpower confrontation of the Cold War provided little political space for a broader array of security concerns, the “war on terror” kicked other threats off policymakers’ priority lists. . . . And the antipathy of U.S. President George W. Bush’s administration to anything dubbed “environmental” set back efforts in international forums and pushed much of the official U.S. work on environmental security behind the scenes, or forced it to be relabeled as disaster relief. Yet interest in environment, peace, and security linkages continues to grow within the UN system, the bilateral development and security communities, and in countries experiencing conflict. As the “force-only” responses to the September 11 attacks have fallen short of achieving either military or human security objectives, policymakers and practitioners have been returning to more inclusive notions of security.³¹ . . .

The Future of Environment, Peace, and Security

. . . The sheer diversity of environment-security links, as complex today as they were 20 years ago, will continue to frustrate those in the policy and analytical realms who want more analytical precision and a narrower lens for a term as broad as “environmental security.” Yet the failure of one set of environment and security linkages to achieve dominance has guaranteed that no avenues have been prematurely closed off. The temptation to crown one set of linkages the top priority or the only legitimate definition of environmental security ignores the diversity of valid concerns that arise in different contexts and sets up a false all-or-nothing choice.

Efforts to broaden the definition of security are again gaining traction, boosted by the widespread concern with the potential impacts of climate change and the perception that using force as the only approach to conflict is counterproductive. A few prominent scientists even claim that climate change is a bigger threat than terrorism.³² These environment and security links have helped break down the stereotype that environmental issues are the province of wealthy advocates interested in saving charismatic wildlife. Instead, policymakers and practitioners are increasingly viewing these natural resources as critical to the day-to-day livelihoods of literally billions of people. By awarding recent peace prizes to Al Gore and the Intergovernmental Panel on Climate Change, as well as environmental activist Wangari Maathai, the Nobel Committee has helped push environmental security back into the limelight, 20 years after the Brundtland Commission brought it to the fore. A few areas, discussed below, illustrate the field’s budding progress and the great potential for meaningful analytical development and practical action.

Down on the Ground: Subnational Analysis

Although there has been a dramatic decline in the number of conflicts over the past decade, persistent ones—including those in the Democratic Republic of the Congo, Nigeria, the Philippines, the Horn of Africa, and Nepal—often have strong environmental components.³³ Whether it is the abundance of valuable resources such as oil, forests, or minerals, or the scarcity of resources such as land or water, these underlying factors are increasingly viewed as central to spurring, prolonging, ending, and resolving these conflicts.³⁴ Analyzing the multiple roles environmental factors play before, during, and after conflict supports a much more robust research and policy agenda than does focusing exclusively on the environment’s potential to cause conflict. This wider lens also helps address the misperception that environment is *the* factor causing conflict; those who analyze environment, conflict, and security issues seek only to be included in the larger conflict discussion.

New analytical developments are bolstering policymakers' and practitioners' interest in practical ways to break the links between environment and conflict. In particular, the increasing ability to analyze georeferenced environmental and conflict data at much more local levels will improve the historically limited quantitative evaluations of these linkages. Preliminary research funded by the National Science Foundation, for example, has found statistically significant correlations between rainfall and civil conflict, strongly suggesting the value of robust analytical work.³⁵ And while violent conflict continues to garner the most attention, broadening the definition of "conflict" to include nonviolent or less organized violent conflict has increased the range of cases under discussion. For example, the social protests that have met water privatization megaprojects (such as large dams), international markets for natural resources, or conservation areas that limit community usage, expand the range (and relevance) of environmental security analysis.³⁶

Climate Change and Security

The recent rise of concern over climate change has both spurred—and been spurred by—climate-security connections. Prominent reports in the European Union, United States, United Kingdom, and Germany aimed at garnering more policy attention to climate change have emphasized its security linkages.³⁷ With a push from the United Kingdom, the UN Security Council devoted an April 2007 session to climate change, peace, and security, the first Security Council session on an environmental topic.³⁸ UN Secretary-General Ban Ki-moon subsequently linked UN efforts to battle climate change with its mission to address the underlying causes of conflict in Darfur, Sudan.³⁹ In March 2008, European Union High Representative for the Common Foreign and Security Policy Javier Solana presented to the European Council a short climate change and security paper responding to pressure (particularly from Germany) to raise the profile of climate-security connections. Mirroring some of the language used in prominent reports from German, British, and U.S. nongovernmental organizations, the brief called climate change a "threat multiplier which exacerbates existing trends, tensions and instability" that could "overburden states and regions which are already fragile and conflict prone," posing "political and security risks that directly affect European interests."⁴⁰

The 2007 Nobel Peace Prize, awarded to Al Gore and the Intergovernmental Panel on Climate Change, most prominently linked climate change and security. In announcing the award, the Norwegian Nobel Committee called climate change both a fundamental threat to human well-being and a contributing factor to more traditional violent conflict. In 1987, the Brundtland Commission argued, "Slowing,

or adapting to, global warming is becoming an essential task to reduce the risks of conflict.”⁴¹ In 2007, the Norwegian Nobel Committee echoed those words:

Extensive climate changes may alter and threaten the living conditions of much of mankind. They may induce large-scale migration and lead to greater competition for the earth’s resources. Such changes will place particularly heavy burdens on the world’s most vulnerable countries. There may be increased danger of violent conflicts and wars, within and between states.⁴²

The heightened attention to climate change boosts the prospects for constructively addressing environment, development, and security linkages. The wide range of potential climate impacts is reenergizing broader debates over human security that suggest redefining security beyond purely militaristic terms. At the same time, the traditional security community’s concern with climate change (and the social reactions it may produce, such as migration) has helped garner wider attention. For example, examining its implications for desertification, precipitation, and crops in vulnerable areas such as the Sahel may also help illuminate the preexisting but neglected connections between these environmental variables and social conflict. Ironically, climate change mitigation efforts, such as increasing the use of biofuels, are arguably creating new natural resource and conflict links, as more forests are cleared for palm oil plantations and food prices are rising as we choose to grow our fuel supplies. These “knock-on effects” present a new research agenda for environment, development, and conflict scholars and practitioners.

Environmental Peacemaking

. . . A growing number of conflict-prevention and post-conflict scholars and practitioners argue that natural resource management can be a key tool for helping prevent or end conflict and for building peace in a post-conflict setting.⁴³ The cooperation imperative spurred by environmental interdependence and the long-term need for iterated interaction can be used as the basis for confidence building rather than merely engendering conflict.⁴⁴

The Nile Basin is an unlikely example of conflict prevention. Many of the countries in this volatile region are beset by high levels of civil conflict, and their widespread dependence on the Nile’s waters have led many to flag this river basin as the most likely to experience international water wars.⁴⁵ Yet for the past nine years, the basin’s riparian states—Burundi, the Democratic Republic of the Congo, Egypt, Eritrea, Ethiopia, Kenya, Rwanda, Sudan, Tanzania, and Uganda—have convened the ministerial-level Nile Basin Initiative (NBI) to develop a shared vision of sustainable use of those waters.⁴⁶ The initiative centers around eight “Shared

Vision” projects—including the Regional Power Trade, Water Resources Management, and Efficient Water Use for Agriculture projects—meant to foster trust and encourage investment. While formally framed as a development enterprise,⁴⁷ these efforts also implicitly serve as a means to prevent conflict predicated on environmental interdependence.⁴⁸ However, the NBI process is not without its critics, and issues of transparency and wider stakeholder participation remain concerns.⁴⁹ In times of active conflict, management of a shared natural resource across lines of conflict can serve as a communication lifeline when other aspects of the relationship remain highly volatile. The “Picnic Table Talks”—in which Israeli and Jordanian water managers met at a picnic table to jointly manage their water resources while their countries were formally at war—are a vivid example. These technical exchanges helped build trust and personal connections that contributed to achieving the larger peace treaty between the countries in 1994.⁵⁰ More recently, Friends of the Earth launched the Good Water Makes Good Neighbors Middle East initiative to promote cooperation among Israelis, Palestinians, and Jordanians on shared water problems.

In this fashion, environmental management serves as a way to develop confidence that may carry over to other aspects of a relationship. Transboundary protected areas or “peace parks” are also an emerging—if still controversial—means to capitalize on shared ecological boundaries to build trust between parties in conflict.⁵¹ Finally, assessing post-conflict environmental conditions can serve as a necessary first step to building a sustainable peace. The UN Environment Programme’s Post-Conflict and Disaster Management Branch (PCDMB) is leading the way on this post-conflict stage with what it calls “environmental diplomacy.”⁵² PCDMB’s objective scientific assessments of war-time environmental damage in countries as diverse as Bosnia, Sudan, Liberia, Iraq, and Afghanistan (and forthcoming, in Nigeria, Nepal, Rwanda, and the Democratic Republic of the Congo) have become a foundation for efforts to strengthen environmental management institutions in ways that contribute to reconciliation and capacity building across lines of conflict. These steps toward “environmental diplomacy,” like most efforts to capitalize on environmental peacemaking, are modest, small-scale, and remain to be fully tried and tested. Yet this robust analysis may soon be possible, as other parts of the United Nations focused on development and conflict issues move to capitalize on the environmental confidence building that can be fostered by addressing natural resource and pollution connections to livelihoods in post-conflict settings. Bilateral aid agencies are also pursuing similar practical steps by incorporating natural resource management into their peacemaking toolboxes.

Many hurdles remain, beginning with the imposing bureaucratic and institutional impediments to collaboration facing environment, development, and security actors, who speak different languages, use different tools, and often have very different bottom-line goals. But pushed by on-the-ground realities, researchers

and practitioners are trying to navigate these complex linkages and find ways to work together. Environmental peacemaking efforts have limited use for unwieldy multilateral environmental agreements, the UN's go-to tool, which are poorly matched to the day-to-day intersections of environment, peace, and security issues at the intrastate level. Instead, parties seeking to break the negative links between environment and conflict must focus on local, national, and regional instruments that can grapple more effectively with the integrated problems of poverty, environment, and conflict.

Twenty years after the release of the Brundtland Report, our common future still depends on the health of our environment. It is increasingly clear that our common peace may rely on it as well. Preparing for and waging war often destroys the environment and diverts resources better deployed for sustainability. And a devastated environment can spur new conflicts over resources. Climate change threatens to destabilize not only our atmosphere, but also nations. But it is also garnering the attention of the wide range of actors necessary to tackle these fundamental challenges. Even as we become more attentive to the ways in which the environment can contribute to conflict, we must remain open to opportunities for environmental peacemaking to help us secure our environment—and ourselves.

NOTES

1. World Commission on Environment and Development (WCED), *Our Common Future* (New York: Oxford University Press, 1987), 290.

2. *Ibid.*, page 304.

3. *Ibid.*, page 304.

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7. WCED, note 1 above, page 290.

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16. J. M. Trollidalen, *International Environmental Conflict Resolution: The Role of the United Nations* (Washington, DC: World Foundation for Environment and Development, 1992).

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46. See *Nile Basin Initiative*.

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48. Anecdotaly, policy efforts from a range of geographical settings (Central Asia, the Caucasus, and East Africa) suggest that making the conflict prevention or post-conflict reconciliation goals of environmental peacemaking implicit or unstated is advantageous. Stating the conflict prevention goals explicitly makes the environmental and security cooperation more difficult to achieve in some settings, suggesting practitioners must find a way to capitalize on the peacemaking gains without overtly framing the goal of such efforts as peace rather than environmental sustainability.

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50. See A. Wolf, *Hydropolitics along the Jordan River: The Impact of Scarce Water Resources on the Arab-Israeli Conflict* (Tokyo: United Nations University Press, 1995).

51. Peace parks are also highlighted as means to (re)open political boundaries and stimulate economic growth from tourism in post-conflict environments. Early peace park efforts in southern Africa in particular have been widely criticized for not sharing benefits with local people and actually creating new human-animal conflicts. For an overview of perspectives, see S. Ali, ed., *Peace Parks: Conservation and Conflict Resolution* (Cambridge, MA: MIT Press, 2007).

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FROM CONFLICT TO PEACEBUILDING: THE ROLE OF NATURAL RESOURCES AND THE ENVIRONMENT

UNITED NATIONS ENVIRONMENT PROGRAMME*

Introduction

Since the end of the Cold War, two fundamental changes have shaped the way the international community understands peace and security. First, the range of potential actors of conflict has expanded significantly to include a number of non-state entities. Indeed, security is no longer narrowly conceived in terms of military threats from aggressor nations. In today's world, state failure and civil war in developing countries represent some of the greatest risks to global peace. War-torn countries have become havens and recruiting grounds for international terrorist networks, organized crime, and drug traffickers, and tens of millions of refugees have spilled across borders, creating new tensions in host communities. Instability has also rippled outward as a consequence of cross-border incursions by rebel groups, causing disruptions in trade, tourism and international investment.

Second, the potential causes of insecurity have also increased and diversified considerably. While political and military issues remain critical, conceptions of

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conflict and security have broadened: economic and social threats including poverty, infectious diseases and environmental degradation are now also seen as significant contributing factors. This new understanding of the contemporary challenges to peace is now being reflected in high-level policy debates and statements. The 2004 report of the UN Secretary-General's High-Level Panel on Threats, Challenges and Change highlighted the fundamental relationship between the environment, security, and social and economic development in the pursuit of global peace in the 21st century,¹ while a historic debate at the UN Security Council in June 2007 concluded that poor management of "high-value" resources constituted a threat to peace.²

More recently, UN Secretary-General Ban Ki-moon confirmed that "the basic building blocks of peace and security for all peoples are economic and social security, anchored in sustainable development, [because they] allow us to address all the great issues—poverty, climate, environment and political stability—as parts of a whole."³

The potential for conflicts to be ignited by the environmental impacts of climate change is also attracting international interest in this topic. A recent high-level brief by the European Union, for instance, called climate change a "threat multiplier which exacerbates existing trends, tensions and instability," posing both political and security risks.⁴ As a result, no serious discussion of current or emerging threats to security can take place without considering the role of natural resources and the environment.

This changing security landscape requires a radical shift in the way the international community engages in conflict management. From conflict prevention and early warning to peacemaking, peacekeeping and peacebuilding, the potential role of natural resources and the environment must be taken into consideration at the onset. Indeed, deferred action or poor choices made early on are easily "locked in," establishing unsustainable trajectories of recovery that can undermine the fragile foundations of peace. In addition, ignoring the environment as a peacebuilding tool misses an important opportunity for dialogue and confidence-building between former conflicting parties: some of the world's greatest potential tensions over water resources, for example—including those over the Indus River system and Nile Basin—have been addressed through cooperation rather than violent conflict.^{5,6} Integrating environmental management and natural resources into peacebuilding, therefore, is no longer an option—it is a security imperative. . . .

The Role of Natural Resources and the Environment in Conflict

Rationale

Environmental factors are rarely, if ever, the sole cause of violent conflict. Ethnicity, adverse economic conditions, low levels of international trade and conflict in

neighboring countries are all significantly correlated as well. However, it is clear that the exploitation of natural resources and related environmental stresses can become significant drivers of violence.

Since 1990, at least eighteen violent conflicts have been fuelled by the exploitation of natural resources. . . .⁷ Looking back over the past sixty years, at least forty percent of all intrastate conflicts can be associated with natural resources.⁸ Civil wars such as those in Liberia, Angola and the Democratic Republic of Congo have centered on “high-value” resources like timber, diamonds, gold, minerals and oil. Other conflicts, including those in Darfur and the Middle East, have involved control of scarce resources such as fertile land and water.

As the global population continues to rise, and the demand for resources continues to grow, there is significant potential for conflicts over natural resources to intensify. Demographic pressure and urbanization, inequitable access to and shortage of land, and resource depletion are widely predicted to worsen, with profound effects on the stability of both rural and urban settings. In addition, the potential consequences of climate change for water availability, food security, the prevalence of disease, coastal boundaries, and population distribution are also increasingly seen as threats to international security, aggravating existing tensions and potentially generating new conflicts.⁹

The relationship between natural resources, the environment and conflict is thus multi-dimensional and complex, but three principal pathways can be drawn:

- a. Contributing to the outbreak of conflict
- b. Financing and sustaining conflict
- c. Undermining peacemaking

Contributing to the Outbreak of Conflict

Many countries currently face development challenges relating to the unsustainable use of natural resources and the allocation of natural wealth. At a basic level, tensions arise from competing demands for the available supply of natural resources. In some cases, it is a failure in governance (institutions, policies, laws) to resolve these tensions equitably that leads to specific groups being disadvantaged, and ultimately to conflict. In others, the root of the problem lies in the illegal exploitation of resources.

Research and field observation indicate that natural resources and the environment contribute to the outbreak of conflict in three main ways. First, conflicts can occur over the fair apportioning of wealth derived from “high-value” extractive resources like minerals, metals, stones, hydrocarbons and timber.¹⁰ The local abundance of valuable resources, combined with acute poverty or the lack of opportunity for other forms of income, creates an incentive for groups to attempt to capture them

by taking control of resource-rich territories or violently hijacking the state. The potential for “high-value” natural resources to contribute to conflict is a function of global demand and depends largely on their market price.

Second, conflicts also occur over the direct use of scarce resources including land, forests, water and wildlife. These ensue when local demand for resources exceeds the available supply or when one form of resource use places pressure on other uses.¹¹ This can result either from physical scarcity or from governance and distribution factors. Such situations are often compounded by demographic pressures and disasters such as drought and flooding. Unless local institutions or practices mitigate competing interests, these tensions can lead to forced migration or violent conflict at the local level. . . .

Third, countries whose economies are dependent on the export of a narrow set of primary commodities are more likely to be politically fragile.²⁷ Not only are their economic fortunes held hostage to the fluctuating price of the commodity on international markets, but it can be difficult for developing countries to add value or generate widespread employment from such exports. Moreover, governments whose revenues are generated from the export of commodities rather than from taxation tend to be alienated from the needs of their constituents. The combination of the problems of currency appreciation and the opaque revenue management and corruption that have developed in many resource-rich countries is known as the “resource curse.”¹²

The common trait in these three situations is the inability of weak states to resolve resource-based tensions peacefully and equitably. Indeed, conflict over natural resources and the environment is largely the reflection of a failure of governance, or a lack of capacity. As demands for resources continue to grow, this conclusion highlights the need for more effective investment in environmental and natural resource governance.

Financing and Sustaining Conflict

Regardless of whether or not natural resources play a causal role in the onset of conflict, they can serve to prolong and sustain violence. In particular, “high-value” resources can be used to generate revenue for financing armed forces and the acquisition of weapons. Capturing such resources becomes a strategic objective for military campaigns, thereby extending their duration.

In the last twenty years, at least eighteen civil wars have been fuelled by natural resources. . . . Diamonds, timber, minerals and cocoa have been exploited by armed groups from Liberia and Sierra Leone, Angola and Cambodia. Indeed, the existence of easily captured and exploited natural resources not only makes insurgency economically feasible¹³ (and, therefore, war more likely); it may also alter the dynamics of conflict itself by encouraging combatants to direct their activities

towards securing the assets that enable them to continue to fight. Thus revenues and riches can alter the mindset of belligerents, transforming war and insurgency into an economic rather than purely political activity, with violence resulting less from grievance than from greed.

Undermining Peacemaking

Economic incentives related to the presence of valuable natural resources can hinder the resolution of conflict and complicate peace efforts. As the prospect of a peace agreement appears closer, individuals or splinter groups who stand to lose access to the revenues gained from resource exploitation can act to spoil peace-making efforts. Indeed, real or perceived risks of how peace may alter access to and regulation of natural resources in ways that damage some actors' interests can be a major impediment. At the same time, natural resources can also undermine genuine political reintegration and reconciliation even after a peace agreement is in place, by providing economic incentives that reinforce political divisions. . . .

Furthermore, preliminary findings from a retrospective analysis of intrastate conflicts over the past sixty years indicate that conflicts associated with natural resources are twice as likely to relapse into conflict within the first five years.¹⁴

Impacts of Conflict on Natural Resources and the Environment

Rationale

The environment has always been a silent casualty of conflict. To secure a strategic advantage, demoralize local populations or subdue resistance, water wells have been polluted, crops torched, forests cut down, soils poisoned, and animals killed. In some cases, such as the draining of the marshlands of the Euphrates-Tigris Delta by Saddam Hussein during the 1980s and 1990s, ecosystems have also been deliberately targeted to achieve political and military goals. During the Vietnam War, nearly 72 million liters¹⁵ of the dioxin-containing defoliant Agent Orange were sprayed over the country's forests, resulting in entire areas being stripped of all vegetation. Some of these areas remain unsuitable for any form of agricultural use today. Recent examples of intentional environmental damage include the 1991 Gulf War, during which Kuwait's oil wells were set on fire and millions of tons of crude oil were discharged into waterways. In this instance, the environment itself was used as a weapon of mass destruction.

While numerous other examples of natural resources being used as a weapon of war exist, the majority of the environmental damage that occurs in times of conflict

is collateral, or related to the preparation and execution phases of wars and to the coping strategies of local populations. In this regard, impacts of conflict on the environment can be divided into three main pathways:

- a. Direct impacts
- b. Indirect impacts
- c. Institutional impacts

Direct Impacts

Often presenting acute risks for human health and livelihoods, the direct impacts of conflict on the environment are the most visible and well understood. This type of impact is largely due to chemicals and debris generated by bomb damage to settlements, rural areas and infrastructure. . . . In some situations, natural resources such as oil wells, forests and water can also be targeted. The direct effects of war are not limited to the countries in which they are waged, as air and water pollution can be carried across borders, threatening the health of populations in neighboring regions. Direct damage to the environment can also result from the movement of troops, landmines and other unexploded ordnance, weapons containing depleted uranium, and the production, testing, stockpiling and disposal of weapons.

Indirect Impacts

By disrupting normal socio-economic patterns, wars force populations to adopt coping strategies, and often lead to internal displacement or migration to neighboring countries. In the refugee camps that are established to provide basic shelter, food and protection, natural resources are critical assets, providing land, water, construction materials, and renewable energy. Damage to natural resources not only undermines the delivery of humanitarian aid, but can also cause conflict with host communities.

Conversely, vulnerable populations that do not flee must find alternative strategies to survive the breakdown of governance, social services and economic opportunities. Despite the long-term consequences, converting natural resources into capital is often a key coping mechanism and lifeline. . . .

Once conflict has diminished, the resettlement of refugees and the restoration of economic activities can put intense pressure on natural resources. The indirect environmental impacts of war-time survival strategies and post-conflict reconstruction can be more persistent and widespread than the direct impacts of war.

Institutional Impacts

Weak governance institutions and expressions of authority, accountability and transparency are frequently eroded by conflict. When tensions intensify and the rule of law breaks down, the resulting institutional vacuum can lead to a culture of impunity and corruption as public officials begin to ignore governance norms and structures, focusing instead on their personal interests. This collapse of governance structures contributes directly to widespread institutional failures in all sectors, allowing opportunistic entrepreneurs to establish uncontrolled systems of resource exploitation. Conflict also tends to confuse property rights, undercut positive environmental practices, and compromise dispute resolution mechanisms. At the same time, public finances are often diverted for military purposes, resulting in the decay of, or lack of investment in, water, waste and energy services, with corresponding health and environmental contamination risks. . . .

The Role of Natural Resources and the Environment in Peacebuilding

Rationale

Whether a war-torn society can maintain peace after a conflict ceases depends on a broad range of factors, including the conditions that led to the onset of war, the characteristics of the conflict itself, the nature of the peace settlement, and the influence of external forces (i.e. global economic or political pressures).

The previous sections have shown that natural resources can be an important contributing factor in the outbreak of conflict, in financing and sustaining conflict, and in spoiling peacemaking prospects. Increasing demand for resources, population growth and environmental stresses, including climate change, will likely compound these problems. At the same time, conflicts cause serious environmental impacts, which need to be addressed to protect health and livelihoods.

In peacebuilding, it is therefore critical that the environmental drivers and impacts of conflict are managed, that tension are defused, and that natural assets are used sustainably to support stability and development in the longer term.¹⁶ Indeed, there can be no durable peace if the natural resources that sustain livelihoods and ecosystem services are damaged, degraded or destroyed. As mentioned above, conflicts associated with natural resources are twice as likely to relapse into conflict in the first five years. Despite this, fewer than a quarter of peace negotiations aiming to resolve conflicts linked to natural resources have addressed resource management mechanisms.¹⁷

Furthermore, the UN has not effectively integrated environment and natural resource considerations into its peacebuilding interventions. Priorities typically lie

in meeting humanitarian needs, demobilization, disarmament and reintegration, supporting elections, restoring order and the rule of law, and opening the economy to foreign investment. The environment and natural resources are often framed as issues to be addressed at a later stage.

This is a mistaken approach, which fails to take into account the changing nature of the threats to national and international security. Rather, integrating these issues into peacebuilding should be considered a security imperative, as deferred action or poor choices made early on often establish unsustainable trajectories of recovery that may undermine long-term peace and stability.

To ensure that environmental and natural resource issues are successfully integrated across the range of peacebuilding activities . . . , it is critical that they are not treated in isolation, but instead form an integral part of the analyses and assessments that guide peacebuilding interventions. Indeed, it is only through a cross-cutting approach that these issues can be tackled effectively as part of peacebuilding measures to address the factors that may trigger a relapse of violence or impede the peace consolidation process. The following section provides three compelling reasons . . . to demonstrate how environment and natural resources can concretely contribute to peacebuilding:

- a. Supporting economic recovery
- b. Developing sustainable livelihoods
- c. Contributing to dialogue, cooperation and confidence-building

Supporting Economic Recovery

Recreating a viable economy after a prolonged period of violent conflict remains one of the most difficult challenges of peacebuilding.¹⁸ A post-conflict state faces key policy questions on how to ensure macro-economic stability, generate employment and restore growth. It must therefore seek to immediately (re)establish systems for the management of public finances, as well as monetary and exchange rate policies. This is complicated by the fact that conflict reverses the process of development, impacting institutions, foreign investment, capital and GDP [Gross Domestic Product].¹⁹

Authorities typically need to identify quick-yielding revenue measures and priority expenditures aimed at supporting economic recovery and restoring basic infrastructure and services. In a post-conflict situation, governments are also faced with high unemployment rates that can result in social instability. Extractable natural resources are often the obvious (and only) starting point for generating rapid financial returns and employment. However, as illustrated by the cases of Sierra Leone and Liberia, the exploitation of natural resources and the division of the ensuing revenues can also create the conditions for renewed conflict. It is therefore

vital that good management structures are put in place, and that accountability and transparency are ensured. . . .

Developing Sustainable Livelihoods

The ability of the environment and resource base to support livelihoods, urban populations and economic recovery is a determining factor for lasting peace. In the aftermath of war, people struggle to acquire the clean water, sanitation, shelter, food and energy supplies on which they depend for their well-being and livelihoods. A failure to respond to the environmental and natural resource needs of the population as well as to provide basic services in water, waste and energy can complicate the task of fostering peace and stability.

Sustainable livelihoods approaches provide a framework for addressing poverty and vulnerability in all contexts. They have emerged from the growing realization of the need to put the poor and all aspects of their lives and means of living at the center of development and humanitarian work, while maintaining the sustainability of natural resources for present and future generations.

Collapse of livelihoods from environmental stresses, overuse of assets or poor governance results in three main coping strategies: innovation, migration and competition. Combined with other factors, the outcome of competition can be violent. For this reason, developing sustainable livelihoods should be at the core of any peacebuilding approach. . . .

Contributing to Dialogue, Confidence-building and Cooperation

The collapse of social cohesion and public trust in state institutions is a crippling legacy of war.²⁰ Irrespective of the genesis of the violence, creating the space for, and facilitating, national and local dialogue in ways that rebuild the bonds of trust, confidence and cooperation between affected parties is an immediate post-conflict task. Peacebuilding practitioners are currently discovering new or unseen pathways, linkages and processes to achieve these goals.

Experience and new analysis alike suggest that the environment can be an effective platform or catalyst for enhancing dialogue, building confidence, exploiting shared interests and broadening cooperation. The approach can be applied at multiple levels, including between local social groups (across ethnic or kinship lines of conflict), between elite parties or leadership in conflict factions, and at the transnational and international levels.

The premise lies in the notion that cooperative efforts to plan and manage shared natural resources can promote communication and interaction between adversaries

or potential adversaries, thereby transforming insecurities and establishing mutually recognized rights and expectations. Such efforts attempt to capitalize on parties' environmental interdependence, which can serve as an incentive to communicate across contested borders or other dividing lines of tension.

The shared management of water, land, forests, wildlife and protected areas are the most frequently cited examples of environmental cooperation for peacebuilding, but environmental protection (in the form of protected areas, for example) has also been used as a tool to resolve disputes over contested land or border areas. . . . Meanwhile, constitutional processes or visioning exercises that aim to build national consensus on the parameters of a new system of governance can include environmental provisions. Issues such as the right to clean air, water and a healthy environment are often strong connecting lines between stakeholder groups with diverging interests. The need for communities to identify risks from climate change and to develop adaptation measures could also serve as an entry point. Finally, as many post-conflict states are parties to international regimes, regional political processes and multilateral environmental agreements, opportunities and support may also exist through these mechanisms.

Conclusions and Policy Recommendations

Three main conclusions can be drawn from the arguments and cases presented in this report:

- a. Natural resources and the environment can be implicated in all phases of the conflict cycle, contributing to the outbreak and perpetuation of violence and undermining prospects for peace. In post-conflict countries, they can also contribute to conflict relapse if they are not properly managed from the outset. The way that natural resources and the environment are managed has a determining influence on peace and security.
- b. The environment can itself fall victim to conflict, as direct and indirect environmental damage, coupled with the collapse of institutions, can lead to environmental risks that threaten health, livelihoods and security. These risks should be addressed as a part of the recovery process.
- c. Natural resources and the environment can contribute to peacebuilding through economic development, employment generation and sustainable livelihoods. Cooperation over the management of natural resources and the environment provides new opportunities for peacebuilding that should also be pursued.

As a result, UNEP's Expert Advisory Group on Environment, Conflict and Peacebuilding recommends that the UN Peace-building Commission and the wider international community consider the following six areas for priority action [Editors' note: The editors are members of this advisory group]:

1. Further develop UN capacities for early warning and early action

The UN system needs to strengthen its capacity to deliver early warning and early action in countries that are vulnerable to conflicts over natural resources and environmental issues. At the same time, the effective governance of natural resources and the environment should be viewed as an investment in conflict prevention within the development process itself:

- Prioritize capacity-building for dispute resolution, environmental governance and land administration in states that are vulnerable to conflicts over natural resources and the environment.
- Include environmental and natural resource issues in international and regional conflict early warning systems and develop expertise for preventive action.
- Build international capacity to conduct mediation between conflicting parties where tensions over resources are rising.
- Support research on how the impacts of climate change could increase vulnerability to conflict and how early warning and adaptation projects could address this issue.
- Ensure that all development planning processes are conflict-sensitive and consider potential risks from the mismanagement of natural resources and the environment.

2. Improve oversight and protection of natural resources during conflicts

The international community needs to increase oversight of “high-value” resources in international trade in order to minimize the potential for these resources to finance conflict. International sanctions should be the primary instrument dedicated to stopping the trade in conflict resources and the Security Council should require Member States to act against sanctions violators. At the same time, new legal instruments are required to protect natural resources and environmental services during violent conflict:

- Develop international certification mechanism to ensure that natural resources can be tracked more effectively.
- A high-level report by the Secretary-General examining the UN’s experience in addressing the role of natural resources in conflict and peacebuilding, recommending ways in which existing UN approaches may be strengthened, and clarifying what constitutes a “conflict resource,” would help improve coordination, increase oversight and provide a basis for the identification of cases that require action by the Security Council.
- Make secondary sanctions systematic and uniform, so that individuals and companies violating sanctions are subject to criminal prosecution, no matter which state they are based in.

- Support and strengthen current processes to develop new international legal instruments against targeting natural resources and ecosystems during conflicts.

3. Address natural resources and the environment as part of the peacemaking and peacekeeping process

During peace mediation processes, wealth-sharing is one of the fundamental issues that can “make or break” a peace agreement. In most cases, this includes the sharing of natural resources, including minerals, timber, land and water. It is therefore critical that parties to a peace mediation process are given sufficient technical information and training to make informed decisions on the distribution and sustainable use of natural resources. Subsequent peacekeeping operations need to be aligned with national efforts to improve natural resource and environmental governance:

- Strengthen UN capacity to provide technical information on the status of natural resources and the environment, and to make recommendations for sustainable use during mediation processes.
- Ensure that there are processes in place within peace agreements for the transparent, equitable and legitimate definition and realization of property rights and resource revenues and tenure.
- Mandate UN peacekeeping operations, where appropriate, to monitor natural resource extraction and management, or certain environmental issues that have the potential to re-ignite conflict or finance rebel groups. In particular, the UN should make efforts, in conjunction with regional organizations and states, to prohibit smuggled resources from being exported from sanctioned countries and to prevent the trade in conflict resources.

4. Integrate natural resource and environmental issues into post-conflict planning

The UN often undertakes post-conflict operations with little or no prior knowledge of what natural resources exist in the affected country, or of what role they may have played in fuelling conflict. In many cases it is years into an intervention before the management of natural resources receives sufficient attention. A failure to respond to the environmental and natural resource needs of the population, including the gender dimension of resource use, can complicate the task of fostering peace and even contribute to conflict relapse:

- Ensure that a conflict analysis is conducted at the operational planning stage of what natural resources exist in the country, the role that they may have played in fuelling conflict, and the potential risks they pose to the peace process if they are mismanaged or poorly governed. This conflict

analysis should directly inform the wider post-conflict needs assessment process.

- Systematically conduct post-conflict environmental assessments that identify environmental risks to human health, livelihoods and security and prioritize needs in the short and medium term.
- Consider environmental sustainability when planning relief and recovery operations, so as to make sure that the projects are not contributing to the risk of future conflict.
- Integrated peacebuilding strategies should include a selection of environmental and natural resource indicators to monitor the peacebuilding trajectory and any potential destabilizing trends.

5. Carefully harness natural resources for economic recovery

Natural resources can only help strengthen the post-war economy and contribute to economic recovery if they are managed well. The international community should be prepared to help national authorities manage the extraction process and revenues in ways that do not increase risk of further conflict, or are unsustainable in the longer term. This must go hand in hand with ensuring accountability, transparency and environmental sustainability in their management:

- Prioritize weaknesses in natural resource and environmental governance structures for capacity-building when these may contribute to a conflict relapse or human insecurity.
- UN bodies should help assess the legitimacy and fairness of existing concession agreements, as inequitable contracts may themselves become a source of conflict. UN agencies or international financial institutions could also provide technical assistance to public officials to help negotiate equitable concessions and contracts on natural resources.
- International organizations should promote the transparent management of revenues from natural resource extraction. Where applicable, efforts should be made from an early stage to bring the country into compliance with international standards of revenue transparency and trade controls such as the Extractive Industries Transparency Initiative, the Kimberley Process, and the Forest Law Enforcement, Governance and Trade initiative.
- At the national level, independent monitoring bodies should be established to carry out regular inspections of logging, mining and other forms of resource extraction.
- Gather lessons learned on best and worst practices in terms of natural resource and environmental management in conflict-affected countries, with a view to developing a database, guidance materials and training for UN Country Teams and peacekeeping operations.

- More systematic efforts are needed by the UN and national governments to engage the private sector in the development of policies on natural resources and the environment.

6. *Capitalize on the potential for environmental cooperation to contribute to peacebuilding*

Every state needs to both use and protect vital natural resources such as forests, water, fertile land, energy and biodiversity. Environmental issues can thus serve as an effective platform or catalyst for enhancing dialogue, building confidence, exploiting shared interests and broadening cooperation between divided groups, as well as between states:

- At the outset of peacebuilding processes, identify locations or potential “hotspots” where natural resources may create tension between groups, as well as opportunities for environmental cooperation to complement and reinforce peacebuilding efforts.
- Conversely, make dialogue and confidence-building between divided communities an integral part of environmental projects, so that peacebuilding opportunities are not missed.
- Include environmental rights in national constitutional processes as a potential connecting line between diverging interests.
- Build on existing community-based systems and traditions of natural resource management as potential sources for post-conflict peacebuilding, while working to ensure that they are broadly inclusive of different social groups and interests.

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THE ROLE OF DROUGHT AND CLIMATE CHANGE IN THE SYRIAN UPRISING: UNTANGLING THE TRIGGERS OF THE REVOLUTION

FRANCESCA DE CHÂTEL*

More than two years after the first protests in the rural town of Dara'a in March 2011, what started as a peaceful uprising against the regime of President Bashar al-Assad in Syria has degenerated into a bloody conflict. In July 2013, the United Nations (UN) estimated that more than 100,000 people had died since March 2011, while millions of officially registered and unregistered refugees are scattered from Egypt to Turkey and beyond, and an estimated 4.25 million people are internally displaced.

The uprising in Syria took many, including many Syrians, by surprise. They looked on in admiration as Tunisians, Egyptians, Libyans and Yemenis took to the streets to demand freedom, justice and the fall of their respective regimes, but largely agreed that nothing like that would ever take place in Syria. Yet less than two months after Bashar al-Assad had told the *Wall Street Journal* that Syria was immune to the wave of protests sweeping through the region,¹ inhabitants of Dara'a, Homs, Hama and other provincial towns poured into the streets demanding freedom, dignity and an end to corruption, in what has been described as a 'rural and urban Intifada'.²

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As in other Arab countries, the uprising in Syria was triggered by a series of social, economic and political factors, including, in this case, growing poverty caused by rapid economic liberalization and the cancellation of state subsidies after 2005, a growing rural–urban divide, widespread corruption, rising unemployment, the effects of a severe drought between 2006 and 2010 and a lack of political freedom.³ More recently, media and analysts have also suggested that climate change plays an indirect role in the Arab Spring and the Syrian uprising.⁴

All these elements are connected and have mutually influenced each other, making it difficult to untangle the importance of different ‘triggers’ or identify any single one as the definitive ‘last straw that broke the camel’s back’. As a result, there is a tendency to take certain events out of context and misinterpret or overstate their significance in relation to the current events unfolding in Syria.

This article attempts to contextualize the 2006–10 drought and place it in the broader framework of (a) the economic reforms and market liberalization that were initiated in the 2000s as part of Syria’s transition to a social market economy, (b) the recent history of agricultural development and water management in Syria and the large-scale mismanagement of resources over the last 50 years and (c) the Syrian regime’s failure to acknowledge and address the impact of this mismanagement. The article is based on extensive research that was carried out in Syria between 2006 and 2010, including fieldwork in the Jezira region in 2008 and 2009, interviews with Syrian officials and interviews with migrants who left drought-affected areas and settled temporarily in Damascus, Damascus Countryside and Dara’a governorates in Syria and in the suburbs of Beirut and the Mount Lebanon region in Lebanon. This data was complemented by information from the literature, reports from UN agencies and media reports.

I will argue that it was not the drought *per se*, but rather the government’s failure to respond to the ensuing humanitarian crisis that formed one of the triggers of the uprising, feeding a discontent that had long been simmering in rural areas. Drought forms an integral part of Syria’s (semi-)arid climate and is not an exceptional phenomenon. Countries in the region such as Iraq, Israel, Jordan, Lebanon and Palestine were also affected by drought in 2007/8, but only Syria experienced a humanitarian crisis, with large-scale migration of populations and widespread malnutrition. I will argue that this can be explained by the fact that the humanitarian crisis in fact predated the drought.

Similarly, climate change *per se*—to the extent that its predicted effects would already be visible—did not drive Syrians into the street in protest; it was the Syrian government’s failure to adapt to changing environmental, economic and social realities.

While climate change may have contributed to worsening the effects of the drought, overstating its importance is an unhelpful distraction that diverts attention away from the core problem: the long-term mismanagement of natural resources.

Furthermore, an exaggerated focus on climate change shifts the burden of responsibility for the devastation of Syria's natural resources away from the successive Syrian governments since the 1950s and allows the Assad regime to blame external factors for its own failures.

The drought hit hardest in the north-east, a region that was on the one hand the most impoverished and neglected part of the country, but which was also the country's breadbasket and source of oil. Since 2000, this region has been rapidly sinking further into poverty as groundwater reserves were depleted and a series of overambitious agricultural development projects overstretched both land and water resources. The drought that struck in 2006 merely formed a final coup de grâce. It was not a sudden, catastrophic event; it merely exacerbated an already disastrous situation. It did not trigger a humanitarian crisis; it merely highlighted the rising poverty levels and accentuated a series of trends that had been taking shape for decades. The humanitarian crisis that followed the 2006–10 drought can thus be seen as the culmination of 50 years of sustained mismanagement of water and land resources, and the dead end of the Syrian government's water and agricultural policies. The extent to which climate change exacerbated the situation is debatable, but in any case should not reduce the burden of responsibility on the Syrian government.

The Syrian climate is characterized as arid to semi-arid, with broad variations in precipitation levels between the Mediterranean coast in the west ($\leq 1,400$ millimeters per year) and the eastern desert areas (< 200 millimeters per year). Fifty-five percent of the country is covered in desert and steppe land; annual precipitation in more than 90 percent of the country lies below 350 millimeters.

Drought forms a structural part of this (semi-)arid climate, with cycles of wet and dry years. Over the last 50 years, from 1961 to 2009, Syria experienced nearly 25 years of drought, which represents over 40 percent of the period. On average, the droughts lasted around four and a half years each, though a drought in the 1970s lasted ten consecutive years.⁵ A number of droughts of two or more years had a significant impact on agricultural production and livestock in the country's north-east: a drought in 1961 resulted in the loss of 80 percent of the camel population and 50 percent of sheep. In the 1998–2001 drought, 329,000 people (47,000 nomadic households) had to liquidate their livestock assets, suffered food shortages and required urgent food assistance, which was 'not an exceptional occurrence'.⁶

The link between climate change and drought in the Eastern Mediterranean region and in Syria has been highlighted in a number of studies based on climate models, which predict that the effects of climate change will lead to more frequent and harsher droughts, higher temperatures and lower and more unpredictable precipitation levels.⁷ However, other analysts point out that there is very little solid evidence to date of such changes. 'The only available evidence that global warming will lead to more extreme weather events relies on modeling. Data do not really sustain this hypothesis so far.'⁸

Data collected in Syria shows that the overall frequency of droughts had not increased over the last 20 years, except in one of Syria's five agricultural zones. Yet farmers and Bedouins in affected areas perceived an increase in droughts. 'One possible explanation is that the impacts of droughts may have become more severe due to higher population densities and groundwater depletion. [. . .] Therefore, even for the same severity of drought, the socioeconomic consequences can be much greater than that in the past.'⁹ Farmers in the Jezira region interviewed in 2009 complained about the increase in hot sand storms, which 'burnt' their crops. They explained this new phenomenon by the desertification of steppe land in Syria's eastern governorates. Far from being a result of diminishing rainfall and climate change, this rapid desertification can be explained by the massive overgrazing of Syria's steppe lands following the nationalization of the steppe and the abolishment of tribes in 1958.¹⁰

According to conservationist and ecologist Gianluca Serra, who worked on various conservation projects in the Syrian steppe from 2000 to 2010, 'the vegetation in the desert naturally adapts to droughts and wet periods. If the ecosystem is healthy, the vegetation can deal with prolonged droughts'.¹¹ Experiments carried out over a period of ten years in Al Talila Reserve, Syria's first nature reserve, in the eastern desert conclusively showed that the mismanagement and overexploitation of resources lay at the root of desertification, not drought or climate change. Between 2000 and 2010, researchers created protected enclosures where grazing was forbidden or controlled (grazing of antelope rather than sheep) as opposed to all the surrounding areas where intensive grazing of sheep was allowed as elsewhere in the steppe. The vegetation in the enclosures fully recovered, creating green pastures, while outside the reserve the desert continued to spread.¹²

This refutes the claim that it is climate change or drought. [. . . Decision makers] can't hide behind external causes like climate change and droughts. Mismanagement and unsustainable regulations have allowed for the over-exploitation of natural resources. [. . .] These ecosystems have a major economic value so combating desertification is important for the national economy. Not to mention that desertification in many parts of the world has fueled socioeconomic conflict and wars because when people start to starve, tension rises. It should be taken very seriously.¹³

The extent to which climate change played a role in triggering the Syrian uprising is the topic of growing debate. Writing about the Arab Spring in general, one analysis argues that while climate change did not cause conflict or unrest on its own, it played a significant role as a 'threat multiplier'.¹⁴ However, it also underlines the complexity of predicting the future impact of climate change, not only on the environment but also on social and political unrest or conflict. 'The very complexity and multiplicity of the possible paths of which climate change is but a small part makes prediction impossible. Any role that climate change plays in

certain events can only be discerned after the fact, and its increased contribution to threats cannot be quantified.¹⁵

In the case of Syria, where there are so many other evident causes of the current conflict, it seems unproductive to focus on the possible role of climate change in the uprising, or indeed in possible future conflict. Climate change may cause more frequent and harsher drought in Syria, but the ongoing failure to rationalize water use and enforce environmental and water use laws certainly constitutes a much greater threat to the country's natural resources. Rather than seeing the 2006–10 drought in north-eastern Syria as a harbinger of catastrophic climate change and conflict scenarios, it should be considered on the backdrop of years of mismanagement, unsustainable policy making and rising rural poverty, which fueled pre-existing discontent and sparked the first protests.

While the 2007/8 season registered as the worst regional drought in 40 years, the overall impact of the 2006–10 drought in north-eastern Syria was undoubtedly exacerbated by a long legacy of resource mismanagement.

During the 2007/8 season, average rainfall across Syria dropped to 66 percent of the long-term average, with some regions receiving no rain at all. The drought also affected Iraq, Israel, Jordan, Lebanon and Palestine.¹⁶ Syria's north-east received less than half of the long-term average in rainfall, with the governorates of Hassakeh, Deir ez-Zor and Raqqa registering shortfalls of 66 percent, 60 percent and 45 percent respectively.¹⁷ As a result, average yield of basic crops dropped by 32 percent in irrigated areas and as much as 79 percent in rain-fed areas. Wheat and barley yields dropped by 47 percent and 67 percent respectively compared to the previous year. The consequences for national agricultural production were devastating: the 2007/8 wheat harvest came in at 2.1 million tonnes, compared to the long-term average of 4.7 million tonnes (of which 3.8 million tonnes was consumed internally), forcing Syria to import wheat for the first time in 15 years.¹⁸

The pattern of poor rainfall continued in parts of the country in 2008/9, particularly in the north-eastern governorates of Deir ez-Zor, Hassakeh and Raqqa. It is important to note, however, that rainfall in other regions largely recovered by 2008/9. Specifically, many media reports after 2011 erroneously stated that the governorate of Dara'a, where the first protests started, had been severely affected by the four-year drought.¹⁹ However, precipitation levels in this governorate recovered to average levels in 2008/9 and exceeded the average in the 2009/10 season.²⁰ This also explains why farmers from the north-east migrated to this region to find work after 2008. The population of Dara'a initially took to the streets to protest against the arrest of 15 children in March 2011 and later demonstrated against corruption,²¹ notably in the domain of well licensing and groundwater use.

In 2009/10, rainfall levels recovered across the country, though the north-east was plagued by irregular rainfall patterns, with 55 consecutive days without rain

during the crucial months of February and March, after good rainfall at the beginning of the rainy season. In addition, farmers producing soft wheat on irrigated land suffered widespread losses in their crop due to an outbreak of yellow wheat rust, a fungal disease, which spread rapidly owing to the previous years of drought.²² As a result, the 2009/10 wheat crop came in at 3.2 million tonnes, well short of the 4–5 million tonnes predicted by the government.²³

The consecutive years of drought had a heavy impact on rural populations throughout the country, but particularly affected farming communities in the northeastern governorates. Broadly known as the Jezira,²⁴ this region has long been among the country's least developed. Documentary films such as Omar Amiralay's *Everyday Life in a Syrian Village*, A Flood in Baath Country and Reem Al-Ghazzi's *Lights* paint a vivid picture of the extreme poverty that existed among rural communities in this region before 2006 and the impact of large-scale dam construction on the Euphrates River since the 1970s. Despite the fact that the Jezira harbored the country's oil supplies and provided staple agricultural crops such as wheat and barley, it had a high poverty rate, low level of healthcare, high illiteracy and few economic alternatives to agriculture.

Figures from 2004 show that the north-eastern region (governorates of Aleppo, Deir ez-Zor, Hassakeh, Idleb and Raqqa) had the greatest incidence, depth and severity of rural and urban poverty, with 58.1 percent of Syria's poor concentrated in the region. This region also had the highest percentage of people living under two dollars per day in Syria (8.53 percent and 21.59 percent for the urban and rural areas, respectively). And while poverty rates decreased in other parts of Syria between 1996/97 and 2003/4, they rose in rural parts of the north-eastern governorates.²⁵

The 2006/10 drought exacerbated this trend. According to several UN assessments between 2008 and 2011,²⁶ 1.3 million people were affected by the drought, with 800,000 people 'severely affected'.²⁷ As the drought extended into a second and third year, the population was less and less able to cope: with no crops for two consecutive years, farmers no longer had seeds, while herders were forced to sell or slaughter their flocks due to a lack of pasture and fodder.²⁸

Malnutrition, which was already widespread in the impoverished north-east, rapidly increased, with up to 80 percent of those severely affected surviving on a diet of bread and sugared tea.²⁹ Data from the three worst-affected governorates indicated a drastic increase in nutrition-related diseases between 2006 and 2010, with 42 percent of six- to 12-month-old children suffering from anemia in Raqqa governorate. In 2010, the UN estimated that 3.7 million people, or 17 percent of the Syrian population, were food insecure, which included more than 2 million people who were living in extreme poverty in 2003/4.³⁰

As the drought continued into its second and third year and the affected populations became increasingly vulnerable, the Syrian government cancelled a number of state subsidies in 2008 and 2009, which multiplied the price of diesel fuel and

fertilizer overnight. For many farmers in the Jezira and elsewhere in the country, this formed a greater burden than the successive years of drought and spurred their decision to abandon their land.

Hinnebusch gives a clear explanation of why Bashar al-Assad's attempt to open the Syrian economy to the world market through a progressive transition from a centrally planned economy to a 'social market economy' failed and, ultimately, led to the 2011 uprising.³¹ In the agricultural sector, deregulation measures since 1986 had led to the phasing out of certain subsidies and other forms of support for farmers. This movement was accelerated under the 10th Five-Year Plan (2006–10) in a bid to integrate the Syrian economy into the global system and prepare the country for accession to the World Trade Organization. The move to cut Syrian dependency on subsidies was necessary from an economic point of view given the growing budget deficit. However, the lack of social safety nets left many in the agricultural sector unable to cope.

According to official figures, agriculture employed 19.5 percent of the country's workforce in 2005/6.³² However, others estimate the figure at 40–50 percent, particularly given the growing proportion of the workforce employed in the informal sector.³³ The liberalization of the agricultural sector after 2000 led to a significant decrease in agricultural jobs. Estimates based on Syrian labor force surveys showed that 460,000 active people stopped working in the agricultural sector between 2001 and 2007, representing a 33 percent decrease in jobs in this sector (and 10 percent of the total labor force), while agricultural GDP rose by 9 percent. Most jobs were lost in 2003 and 2004, two years not affected by drought.³⁴

The cancellation of the subsidy on diesel fuel in May 2008 pushed prices up overnight from SYP7 (\$0.14) to SYP25 (\$0.53).³⁵ Farmers in Syria use diesel to extract groundwater for irrigation and pump surface water to their fields, but also to transport their goods to market afterwards. Seen from a purely environmental point of view, the move to abolish subsidies was entirely justified given the alarming state of the country's groundwater reserves that have been largely depleted since the introduction of diesel motor pumps in the 1960s.³⁶ But the price hike, which came just weeks before the harvest, forced many farmers in the north-east to stop irrigating their already meagre crop. Others were able to continue irrigating until the harvest, but were subsequently unable to transport their produce to market. Younes Berho, a farmer from the Raqqa region, fed his red pepper crop to his sheep in 2008, as he could not afford the price of transport to the market in Aleppo following the subsidy cuts. Many farmers who abandoned their land and left the Jezira in 2008/9 echoed Berho's experience.

In May 2009, the price of chemical fertilizer was also liberalized and prices doubled from SYP450 to SYP900 (\$9.60 to \$19.15) per 50 kilo, worsening the plight of farmers.³⁷ The average monthly salary in Syria in 2009 was \$242, but most farmers earned significantly less than this, with 30 percent of workers in the agricultural sector earning \$109 or less.³⁸

Following the subsidy cuts in 2009, farmers and herders from the north-east massively abandoned their land and migrated to urban areas and the southern governorates in search of work. While seasonal migration—particularly of men seeking work in the construction industry in Aleppo, Beirut and Damascus—has long been common in rural areas, migration of whole families was a relatively new phenomenon. For example, families who lost their lands after the construction of the Tishrin Dam on the Euphrates in 1999 migrated to the Damascus suburb of Al-Hammouriyeh and were still living there in tents in 2009. Dozens of drought victims settled in a tent camp in Mzeirieb near Dara'a from 2008 onwards, but inhabitants of the camp and their relatives in the north-east said the camp had existed for more than ten years. The drought just meant it had expanded.

While no exact figures exist, UN agencies estimated that up to 65,000 families or around 300,000 people migrated from the north-east,³⁹ and that 60–70 percent of villages in the governorates of Hassakeh and Deir ez-Zor had been deserted in 2009.⁴⁰ In reality this figure is likely to have been a lot higher as no comprehensive study was ever carried out on the number of internally displaced people and the figures did not take into account workers and families who crossed to Lebanon. The migrants settled in makeshift illegal tent camps scattered around the Damascus and Aleppo suburbs and southern governorates and sought work in agriculture, construction or small industry, earning SYP200–400 (\$4.25–8.50) a day.⁴¹ The tent camps, which had no water, sanitation or electricity, varied in size from one or two tents to up to 80 tents. Tents were patched together from old burlap sacks and pieces of plastic.

After initially ignoring the mounting crisis, officials acknowledged that the drought had pushed up food prices and put pressure on basic food supplies,⁴² forcing Syria—a net exporter of wheat since the 1990s—to import wheat for the first time in 15 years in 2008.

Faced with a worsening humanitarian situation in the north-east, the government launched two drought appeals in conjunction with UN agencies in September 2008 and August 2009 to help finance a series of short-, medium- and long-term aid and development projects. However, the 2008 Syria Drought Appeal received just 20 percent of the \$20 million requested, while the 2009 Syria Drought Response Plan⁴³ received just 33 percent of the requested \$43 million.⁴⁴

The drought appeals primarily targeted populations of the governorates of Deir ez-Zor, Hassakeh, Homs and Raqqah. Migrants to the southern governorates received no aid from the government or international aid agencies. Moreover, the Syrian security forces discouraged private Syrian initiatives to help the migrants. In July 2009, the United Nations Children's Fund (UNICEF) carried out an assessment of 25 tent camps in the Damascus suburbs with a Syrian NGO, but no results of the mission were published, and neither the government nor aid agencies followed up

with any concrete aid plan for the displaced populations.⁴⁵ Instead, migrants were 'encouraged' to return to their drought-stricken lands in the north-east, in exchange for cash handouts, transport assistance or the promise of food aid upon return to the north-east. Needless to say, few took up this offer. No aid was provided in the tent camps themselves.⁴⁶

The shortfall in funding for the two drought appeals was closely related to the government's efforts to downplay the extent of the crisis. The donor community was largely unaware of the humanitarian crisis unfolding in the country's north-east and donors complained of a lack of clarity regarding the government's long-term strategy to cope with the effects of drought.⁴⁷ For instance, some questioned why the Syrian government's national drought strategy, which had been under preparation since 2000 and was officially approved in 2006, was not put to use during the drought period.⁴⁸

There was also disagreement within the government, with the minister of irrigation questioning the severity of the drought in November 2009.⁴⁹ In general, the government was keen to uphold the image of Syria as a self-sufficient producer of wheat and other key staples and to avoid any closer examination of the deeper causes of the humanitarian and environmental crisis that was spreading from the north-east to southern governorates. It severely restricted media coverage and sought wherever possible to frame the worsening situation in the broader context of the global food crisis, financial crisis and climate change, portraying Syria as a victim of external factors and natural disasters beyond its control.⁵⁰

Syrian state media outlets largely omitted any coverage of the drought and its economic and social repercussions. Coverage highlighted agricultural production achieved despite the lower rainfall and denied local water shortages.⁵¹ The only reference to the drought occurred in articles discussing global or regional climate change, where 'decreased rainfall in Syria' was mentioned as an example of the effects of global climate change.⁵²

Syrian private media dedicated more space to coverage of the drought and its victims, but largely failed to place them in the context of years of resource mismanagement. After June 2009, foreign media was severely restricted in its coverage of the crisis and journalists who obtained a journalist visa were banned from visiting the governorates of Damascus Countryside, Dara'a or Suweida, where the majority of the tent camps had sprung up. Accompanied by 'guides' and 'translators', foreign journalists were instead taken to Hassakeh and Raqqqa governorates where they were allowed to interview villagers under supervision. Few were able to obtain interviews with Syrian government officials.

The government's response to the drought—attempts to downplay it and subsequently deny the humanitarian crisis or blame it on externalities—is part of a mindset that influences all aspects of policy making and implementation in the

Syrian water sector. As in many other countries in the water-scarce Middle East–North Africa (MENA) region, water is considered a strategic resource that pertains to national security. As a result, accurate and up-to-date information on water availability and use is not readily available to the general public.

However, in Syria the fixation on water as a ‘sensitive’ issue has extended far beyond strategic considerations and covers all levels of water management. Water has become a taboo that is reluctantly discussed, not only in the public domain but also at government level. The idea that water is, and should remain, ‘sensitive’ goes unquestioned. As a result, government officials, water experts and analysts avoid any deeper analysis of the state of the country’s water resources. This in turn means that any efforts to reform the sector remain cosmetic.

In the context of the uprising in Syria, political scientist Marwan Kabalan wrote in 2012 that ‘Syria has two power structures: the official powerless one and the real one.’⁵³ He describes how the former comprises all the institutions of a modern state, including a cabinet, parliament, ruling party and bureaucracy, while the latter is made up of just a small group who make key decisions behind closed doors. Similarly, the Syrian water sector operates in two realities. On the one hand there is the official narrative, a facade, which portrays Syria as a naturally water-scarce country actively working to ‘modernize’ its water sector,⁵⁴ and on the other there is the reality on the ground of an inefficient, corrupt and rigid water management system that has enabled large-scale overexploitation of water and land resources and engendered growing poverty and disenfranchisement among rural communities.

The official narrative portrays Syria as increasingly water stressed due to a range of extraneous environmental and socioeconomic factors such as climate change, desertification (due to climate change), unequal distribution of water resources, seasonal variations in rainfall and population growth. However, it also admits that Syria’s water sector faces a series of institutional challenges. In doing so, the government instantly neutralizes any criticism of its land and water use policies, as it can simply counter that it is addressing these issues but that it ‘takes time’. By acknowledging that irrigation systems need to be modernized, urban networks need to be renewed and institutional structures simplified, the government creates the impression that it is committed to ‘modernization’ and that it is both a responsible and a responsive actor.

Thus the Syrian government operates on the surface, going through the motions of managing the country’s water resources, with little concrete result or proof of lasting change on the ground. In the long run, water and its management become almost abstract concepts that have little connection to reality and the rapidly worsening state of the country’s water resources. The institutional water management framework is a fictional arena where plans are outlined on paper but never followed through, goals are set but never achieved, and the minister of water can boast of ‘an excellent water resources management system’,⁵⁵ while aquifers are depleted

and pollution levels soar. This dynamic is reinforced by the culture of secrecy and the 'sensitivity' of water described above, which has engendered widespread self-censorship across the Syrian water sector and among those working with it.

The official narrative does not correspond to the reality of a deeply dysfunctional water sector, which is incapable of reform or change as long as basic issues such as inaccuracy and incompleteness of data, lack of human resources, opaque financial governance and lack of accountability are not comprehensively addressed. The existing structure makes such an overhaul impossible as the 'sensitivity' of water precludes any substantial discussion on the legacy of 50 years of agricultural and water resource mismanagement.

As in many countries in the MENA region, water policy in Syria has since the 1950s been driven by a supply-side approach with a specific focus on dam construction and irrigation projects in the north-east of the country.⁵⁶ The relentless drive to increase agricultural output and expand irrigated agriculture blinded policy makers to the natural limits of the country's resources. Unrealistic agricultural targets, corruption, a failure to implement and enforce legislation, and the absence of a long-term strategy have thus devastated a region that was considered a breadbasket for Syria and the region.⁵⁷

Over the past 60 years, Syria's agricultural sector has undergone intensive development, particularly in the north-east of the country. The country's irrigated area has doubled over the past 20 years from 651,000 hectares in 1985 to 1.35 million hectares in 2010.⁵⁸ Sixty percent of this surface area is irrigated with groundwater, which is being extracted at an unsustainable rate. Ninety percent of the country's water goes to agriculture, by far the highest percentage in the region, with very low irrigation efficiency. Over 80 percent of irrigated land is still irrigated through traditional flooding methods and losses in the open concrete government irrigation canals range from 10 to 60 percent.⁵⁹

Growing demand and the continued drive to expand the irrigated area has created a water deficit. Syria's total available water resources for use were estimated at 15.6 billion cubic meters in 2007. Total average annual water withdrawal in the same year was 19.2 billion cubic meters. The resulting 3.59 billion cubic meters deficit was compensated with water from dam reservoirs and groundwater reserves. Syria's per capita water availability had dropped to 882 cubic meters per year in 2007, classifying it as a water-scarce country.⁶⁰ While the official narrative hastens to point to external factors such as population growth, worsening drought conditions and climate change, the absence of a long-term national water management strategy and overambitious agricultural policies should not be overlooked.

Like elsewhere in the region, Syria's population has grown rapidly over the past 60 years, rising from 3.3 million in 1950 to approximately 21.4 million today, with 53 percent of the population living in urban centers. This explosive growth is the direct result of a strong pro-natalist policy launched in the 1950s, which led to an official

ban in the trade and use of contraceptives in the 1970s.⁶¹ Syria's annual average population growth rate remains among the highest in the region at 2.94 percent, down from around 3.75 percent in the 1970s. The population is expected to increase to 37 million by 2050.⁶²

According to the official narrative, the strong drive to develop irrigated agriculture is linked to the demands of a growing population and the desire to achieve food self-sufficiency. Yet the national wheat production target of 4–5 million tonnes per year exceeds internal demand, while cotton—clearly a non-food crop—accounts for the greatest share of total irrigation water after wheat. 'Hence the scarcity in water resources which Syria faces is far from a "natural" characteristic of the country's limited resources and growing population.'⁶³ Despite the water deficit, and extensive proof that much of the land in the north-east is in the long term unsuited to intensive irrigation,⁶⁴ expansion of the irrigated area through land reclamation remained official government policy, with over 400,000 ha earmarked for reclamation in Deir ez-Zor and Hassakeh governorates in 2011.⁶⁵

The culture of secrecy around water has engendered a chain of mechanisms that weakens the system. First of all, the obsession with the 'sensitive' nature of water has resulted in a lack of transparency. On a governmental level, the perceived 'sensitivity' of all water-related topics means that data sharing between and within ministries and research institutions is limited and fraught with bureaucratic procedure. Different ministries and government research bodies do not freely share data, and data are not shared between governorates. In many cases, different ministries use different methods to assess the state of the country's water resources, resulting in a cacophony of contradictory data sets.⁶⁶ This general confusion makes it impossible to articulate, let alone implement, a coherent national water policy.

This situation is not helped by the sector's arcane institutional framework. The system is trapped in a colossal bureaucratic structure with 22 ministries, councils, commissions and directorates directly and indirectly involved in water management. Often these bodies have overlapping responsibilities but there is little coordination between them.⁶⁷ Hinnebusch describes the agricultural management system under Hafez al-Assad (1963–2000), which was narrowly linked to the country's water development strategy, as not only bureaucratic and fragmented, but also fraught with rivalries between the different ministries.⁶⁸ This situation has remained largely unchanged since Bashar al-Assad took over in 2000.

The problem of conflicting, outdated and inaccurate data is worsened by a widespread lack of capacity in the water sector. The majority of staff in the ministries of Agriculture and Irrigation has barely finished secondary school and only a small minority has a university degree. Of the multiple bodies administering the water sector, the Ministry of Agriculture and Agricultural Reform is the largest employer, followed by the Ministry of Irrigation and its water establishments. These

institutions have very few educated staff, with 40–60 percent of employees having only completed preparatory school or lower.⁶⁹ Moreover, low salaries in senior positions, clientelism and nepotism within the ministries have encouraged corruption.⁷⁰

The lack of transparency, corruption and absence of reliable data leads to a lack of accountability. Ambitious policies are drafted on paper, but never implemented; special committees are formed to ‘study’ various aspects of sector modernization, but final reports are never produced; studies are carried out, but never followed up on; laws are issued, but inconsistently enforced. This has enabled years of unsustainable management.

The government’s inability to implement water policy and enforce law is perhaps most clearly exemplified in its failure to address the continuing depletion of the country’s groundwater reserves, resulting in widespread over-extraction and depletion of aquifers. Traditionally, most farmers living in areas removed from the major rivers relied on seasonal rainfall to water their crops. They used shallow hand-dug wells to draw up groundwater manually, which they used for drinking water and domestic purposes only. As extraction levels were low, the groundwater was naturally replenished during rainy periods.

The large-scale introduction of diesel motor pumps in the 1960s, however, led to a rapid drop in groundwater levels. From the 1970s to the end of the 1990s, farmers across the country drilled hundreds of new wells and massively expanded the areas irrigated by groundwater.⁷¹ The number of wells is estimated to have increased from around 135,089 in 1999 to over 229,881 in 2010.⁷² Fifty-seven percent of wells were unlicensed in 2010. During the 1980s and 1990s withdrawal rates were approximately five times higher each decade than they had been in previous decades. In the worst-affected areas, such as Mhardeh in Hama governorate and Khan Shaykhun in Idleb governorate, the over-pumping led to a drop of up to 100 meters between the 1950s and 2000.⁷³ The huge increase in groundwater use had similar effects in many other areas. In the period between 1993 and 2000, groundwater levels in the Damascus Ghuta and its surroundings dropped by more than 6 meters per year in certain areas.⁷⁴

Far from acknowledging the limits of the resource during the 1980s and 1990s, the government encouraged the large-scale expansion of groundwater-irrigated areas and supported the digging of new wells for cotton cultivation.⁷⁵ Farmers had easy access to advantageous loans to drill wells and install pumps, and fuel prices were heavily subsidized, making it inexpensive to extract water, even from great depths. In addition, the licensing and monitoring of wells was poorly organized and thousands of new wells were sunk without government licenses during the 1980s and 1990s.

In the late 1990s the government issued a decree demanding the licensing of all illegal wells by 2001—a measure which had little concrete effect. Later, the 2005 Water Law outlined various measures to improve water resource protection, license

wells and better regulate drilling procedures, with a commitment to punish violators with fines and prison sentences.⁷⁶ The government required well licenses to be renewed annually to allow for the monitoring of groundwater levels. However, this engendered widespread corruption as security personnel or local officials forced farmers to pay bribes for new licenses, which in turn triggered strong resentment in rural areas.⁷⁷ The widespread corruption also meant that the number of wells continued to increase despite the new law.

Poor understanding of sustainable groundwater use coupled with a weak legal framework and failure to enforce laws has led to depletion of aquifers across the country. Aquifers in large parts of Hassakeh governorate, which was heavily settled and cultivated from the 1970s on, are depleted,⁷⁸ with large-scale migration from the land since the late 1990s. Massive over-pumping has led to the drying up of many springs, while most wells and shallow aquifers have been depleted. The Khabur River no longer flows in summer since 1999 and one of the largest karst springs in the world, the Ras al Ain Springs on the Syrian–Turkish border, has disappeared completely since 2001 following extensive over-extraction in the spring catchment area over the last 50 years.⁷⁹ The area of Nebk north of Damascus, which used to be renowned for its vines and wheat fields, has turned to desert following extensive overexploitation of groundwater. In 2009, farmers there worked as real-estate developers.

It is important to consider the 2006–10 drought and its possible role in triggering the 2011 uprising in the broader context of 50 years of resource mismanagement, rapid economic liberalization, the abrupt cancellation of state subsidies and the government's failure to address a humanitarian and environmental crisis that had been taking shape for more than a decade.

The Syrian uprising that started in March 2011 was sparked by a series of interrelated social, economic and political factors. While it is tempting to include 'drought' and 'climate change' in this list of triggers, it is important to keep a clear view of the correlations between the different causes and effects of events: 50 years of resource mismanagement and overexploitation caused the depletion of resources, which in turn led to growing disenfranchisement and discontent in Syria's rural communities. The 2006–10 drought exacerbated an already existing humanitarian crisis. The government's failure to adequately respond to this crisis was one of the triggers of the protests that started in March 2011, along with a host of political, economic and social grievances.

The possible role of climate change in this chain of events is not only irrelevant; it is also an unhelpful distraction. In the context of the future of water management in Syria, it distracts from much more tangible and real problems; in the context of the uprising, it strengthens the narrative of the Assad regime that seizes every opportunity to blame external factors for its own failings and inability to reform.⁸⁰

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ENVIRONMENTAL PEACEBUILDING: THE GOOD WATER NEIGHBORS PROJECT

ECOPEACE*

1. Introduction

...

Environmental cooperation is part of a long-time solution to conflict. It offers sustainable solutions for the future. It contributes to the improvement of living conditions, such as for instance the supply of water, and it fosters the building of confidence and trust among adverse societies. Environmental issues and the mutual ecological dependence across territorial borders facilitate and encourage cooperation, cooperation that often is a first step toward the initiation of an ongoing dialogue, which would be difficult to mediate through political channels. As shared management of environmental resources develops and parties to a conflict are integrated in cooperative negotiation processes[,] political tensions can be overcome through the establishment of mutual trust. [The] creation of a common regional identity and the idea of mutual rights and expectations are likely to emerge (Carius 2006:11).

The Israeli-Palestinian conflict has no specific ecological cause. Nevertheless, ecological issues such as water supply, pollution of groundwater, solid waste

*Excerpted from EcoPeace, *Environmental Peacebuilding Theory and Practice: A Case Study of the Good Water Neighbors Project and In-Depth Analysis of the Wadi Fukin/Tzur Hadassah Communities*, January 2008. Reprinted with permission.

management and others are of major importance to the region and are a shared burden on both societies. Solving these common ecological challenges through cooperative solutions offers therefore an outstanding opportunity to bring about an initial dialogue between the parties to conflict, a dialogue which for once is not directed at political issues but in fact at shared problems and concerns. This interaction has the potential to converge the two adverse societies and consequently is an essential first step to foster and build sustainable peace in the region.

In the area of Israel, Jordan and the Palestinian Authority, different approaches and efforts are taken by different organizations in the field of environmental peace-building. Although they share the idea that nature ignores political boundaries and therefore has great potential to contribute to the building of peace in the Middle East[,] they all have their own *modus operandi* and a history of success, progress and failure. One outstanding and promising example for environmental cooperation is the Good Water Neighbors project led by the trilateral non-governmental organization EcoPeace. An insight into the project and its achievements provides us with valuable data and information on how to successfully manage a cross-border environmental project in an area of protracted conflict.

...

5. EcoPeace

5.1 *The Role of an NGO as Peacemaker*

In the aftermath of international war, post-conflict peace-building may take the form of concrete cooperative projects which link two or more countries in a mutually beneficial undertaking that can not only contribute to economic and social development but also enhance the confidence that is so fundamental to peace. I have in mind, for example, projects that bring States together to develop agriculture, improve transportation or utilize resources such as water or electricity that they need to share, or joint programs through which barriers between nations are brought down by means of freer travel, cultural exchanges and mutually beneficial youth and educational projects. Reducing hostile perceptions through educational exchanges and curriculum reform may be essential to forestall a re-emergence of cultural and national tensions which could spark renewed hostilities. (UN Agenda for Peace 1992:5)

The UN Agenda for Peace highlights the essential elements of peacebuilding which are also of main importance to the concept of environmental peacebuilding: the establishment of concrete cooperative projects and the utilization of common resources within these, the enhancement of confidence and the development of mutual understanding and trust through educational exchanges.

The work of EcoPeace takes these pivotal elements into account and therefore offers a good example for how to successfully implement projects in the field of environmental peacebuilding in an area of protracted conflict. The NGO helps to advance the peace potential in the region through the empowerment of Palestinian, Jordanian and Israeli communities and the support of shared dialogue and cooperation between them. It builds up community partnerships with the aim of raising the awareness of shared environmental issues and developing common solutions. Education and the creation of cooperative knowledge on common environmental threats play a central role in the design of every project. The final aim is not only to produce a feeling of a shared region and responsibility—neglecting for once political issues and boundaries—but to change the environmental behavior and create shared gains and benefits. These efforts build linkages between societies that are the cornerstone for confidence and trust-building between parties to a conflict.

Lederach (1997:66) emphasizes that “... peacebuilding ... should be understood as a process made up of roles and functions rather than as an activity that resides in the person of the mediator or intermediary team.” Using the definition composed by Mitchell (1993:147) concerning roles and functions of external peacemakers[,] the following four roles may be ascribed to the NGO EcoPeace:

- “Enskiller (empowerer): Develops or equalizes skills and competencies needed to enable parties to reach a mutually acceptable and sustainable solution.
- Envioner (fact finder): Provides new data, ideas, theories, and options for adversaries to select or adapt. Develops fresh thinking on [a] range of possible options or outcomes that might lead to a solution.
- Enhancer (developer): Provides additional resources to assist adversaries reach a positive-sum solution.
- Reconciler: Undertakes long-term actions to alter negative attitudes, stereotypes, and images held at large within adversaries. Builds new relationships across remaining divisions.”

As an Enskiller EcoPeace creates knowledge and abilities to improve the environmental situation in Israel, Jordan and the Palestinian Authority and proposes sustainable solutions from which all the societies may benefit. As an Envioner EcoPeace provides different new ideas and options for solving environmental threats within and in cooperation with partnering communities. As an Enhancer EcoPeace allocates the communities on the one hand with financial resources and on the other hand with knowledge on their own and the other's situation, their future prospects and possibilities. And finally, as a Reconciler EcoPeace fosters the change of negative perceptions and images and the establishment of long-lasting relationships and cooperation between the societies. The building of new relationships is seen as one

of the core elements of peacebuilding as relationships “in their totality form new patterns, processes and structures” (Lederach 1997:85) which means that they have the potential to alter existing schemes and effectuate changes within societies, and generate processes of social change. A pivotal condition for the creation of a long-lasting relationship between adversaries is the common “need to move . . . toward a desired and shared vision of increased interdependence” (Lederach 1997:84).

5.1.1 Capacity and Relationship Building

As an Enskiller EcoPeace does what Lederach is calling “capacity building.” “The word ‘capacity’ . . . is linked to a concept of empowerment. . . . [E]mpowerment is related to a fundamental challenge of peacebuilding: How to create and sustain within individuals and communities the movement from ‘I/we cannot effect desired change’ to ‘I/we can.’ . . . [C]apacity building therefore refers to the process of reinforcing the inherent capabilities and understandings of people related to the challenge of conflict in their context, and to a philosophy oriented toward the generation of new, proactive, empowered action for desired change in those settings” (Lederach 1997:108–109). Capacity building is a first fundamental step in the long-term process of developing understanding and abandoning negative stereotypes and has a greater impact if it is applied in and by groups and communities.

Empowering communities is one of the main efforts taken by EcoPeace. Local field staff (teachers, social workers and others) are appointed to work within the communities, involving youth, adults, schools and different local stakeholders such as mayors in different projects. The success of the projects emerges on the one hand from the realization of concrete environmental and educational projects within the communities and on the other hand from cooperation with partnering communities which suffer from similar environmental hazards and therefore have shared intentions to improve the present situation.

With the example of EcoPeace it becomes apparent how capacity building is closely related to relationship building. It is essential not only to develop an individual’s capacity and skill but also to build relationships in and across the lines of the division in a context of protracted conflict (Lederach 1997:109).

Sustainable peacebuilding requires a change in relationships in which the vision of a shared future is created and an understanding of, and practical responses to, the existing realities and crises are established (Lederach 1997:112). EcoPeace has devised an infrastructure for its projects that both fosters the development of a common vision for the future and realizes improvements in the environmental situation of the communities.

5.1.2 Grassroots, Middle-Range and Top-level Leadership

EcoPeace combines bottom-up community work with top-down advocacy which together lead to a successful implementation of projects. Lederach (1997:137)

mentions the importance of the horizontal and the vertical integration of people and processes for the emergence of social change and the establishment of a sustainable peace.

Nevertheless, in recent times more and more emphasis is put on the grassroots which often turn the balance for ending conflict. "One could argue that virtually all of the recent transitions toward peace—such as those in El Salvador and Ethiopia, as well as the earlier one in the Philippines—were driven largely by the pressure for change that was bubbling up from the grassroots. In fact, at times it seems that exhaustion, rather than innovative planned transformation, is chiefly responsible for ending conflicts" (Lederach 1997:52). Special attention may be given therefore to the empowerment of the grassroots in projects such as the Good Water Neighbors that strengthen the bottom of a society and facilitate action.

Not less important than the grassroots level is the middle-range leadership. Middle-level leaders are positioned so that they are connected both to the top and the grassroots level. They have the advantages of not being controlled by the authority and knowing the context and the experiences of people living at the grassroots level. Furthermore middle-range leaders do not seek to capture any political or military power but instead they derive their status and influence from ongoing relationships. As they are neither in the international nor the national limelight they tend to have greater flexibility of movement and action than top-level leaders. This flexibility is useful for making vertical and horizontal connections that are necessary to sustain a process of change (Lederach 1997:41–42/81). Believing that middle-range leaders exhibit a determinant location in a conflict situation and might be part of achieving and sustaining peace, EcoPeace closely works with the mayors of the communities and regions involved in the Good Water Neighbors project. The mayors of the partnering communities sign Memorandums of Understanding in which they adhere to cooperation and the common engagement for shared environmental problems. Although these Memorandums of Understanding are not official agreements they are a first step in the establishment of a long-lasting bond and trust between communities and a statement to the outside world that will and belief for cooperation and a peaceful coexistence do exist. Moreover with signing this document the mayors are showing their residents that cooperation with the former adversaries is the desirable and right pathway to the resolution of the conflict and the building of sustainable peace in the region.

5.2 Approach of EcoPeace

... EcoPeace combines two types of work which together help the NGO to meet all the criteria of peacebuilding: bottom-up community work and top-down advocacy.

An important part of the top-down advocacy is the composition of academic and policy papers which aim at displaying in detail the severity of the cross-border

environmental problems. Written by experts from the relevant societies the policy papers have the potential to gain credibility and support of local and regional stakeholders. The policy papers, based on common research, are designed to create a single regional vision concerning the solution to the cross-boundary problem at hand. Policy papers focus on transboundary eco-systems such as the Jordan River, Dead Sea and Mountain Aquifer and highlight the importance and necessity of a common management and vision as a solution for the environment and conflict situation in the region. Each office led by their director and local staff then advocate/educate decision makers and their respective public, the common vision espoused. The strength of this approach is that Jordanians advocate the position to Jordanians, Palestinians to Palestinians and Israelis to Israelis. In each case it is the same position, but in the cultural context and manner that maximizes local influence. Furthermore, the NGO includes Israeli, Jordanian and Palestinian media in its endeavors[,] using media coverage as a means of creating political pressure and placing shared environmental issues on the daily political agenda. A successful example is the large public and media attention raised for the public hearing of the World Bank, concerning the Red-Dead Canal, which brought about that the alternative of the Jordan River may be included in the Terms of References of the World Bank feasibility study. The establishment of a shared academic and policy vision is essential for the development of community understanding and leadership as people may use scientific knowledge to both diffuse and defend their undertakings. Moreover it creates an overall accepted vision for a better common future which generates a process of trust-building, the cornerstone of peacebuilding.

Consistency, creativity and flexibility constitute the fundament for the strength and success of the NGO. Although EcoPeace has been focusing on the same issues for over [22] years its work is characterized by the steady generation of new ideas which often originate from one community and are then applied to other communities all over the region (see 5.3 The Neighbors' Path). In contrast to any governmental organization the NGO has a very broad room for maneuver and can gain community belief and support though the realization of concrete projects such as for instance the successful introduction of gray water/rain water harvesting systems in schools and municipal buildings of the communities participating in the Good Water Neighbors project.

5.3 Good Water Neighbors Project

The Good Water Neighbors (GWN) project is one outstanding example of a successful effort in the field of environmental peacebuilding in the Middle East. The general idea behind the project is that the dependence on the same water resources can create one community out of adverse users and stakeholders. This community

on the one hand benefits environmentally and economically from cooperative management and on the other hand builds up long-lasting relationships which will, in a long-term perspective, facilitate the establishment of trust and the feeling of a shared collective identity. Basically the project strives for achieving two main goals. First, a change of perception towards the environment and at a later stage towards cooperation and peace and second a definite change in behavior towards the aforesaid issues which will assure sustainability and endurance.

The Good Water Neighbors project was established in 2001 working until 2005 (Phase I of the project) with 11 Israeli, Palestinian and Jordanian Communities, expanding in the present Phase II, 2005–2008, to 17 communities [Editor's note: Phase III featured 28 communities in 2013]. The intention is to further increase the number of communities until a critical mass is achieved. Not surprisingly when the project was first launched it was difficult to convince communities to join. Today, however, there is demand from new communities to come on board but sadly lack of funding is the current impediment.

Each community has a neighboring partner community which is located on the other side of the political divide/border and shares and depends on the same water resource. A local staff person, coming from the community, is hired to work for EcoPeace and carry out the project activities. Local staff [are] chosen on the basis of their ability to work with the community and their acceptance in the community. Peace activists and environmentalists are not sought for this position but rather an individual that knows how to speak in the local community context. The project aims at raising environmental awareness and developing initiatives for the improvement of the environmental situation within and between the partnering communities.

Led by the local staff person, the project works with three groups of stakeholders: youth, adults and mayors. In each community, local field staff works in close partnership with youth and adults, through local schools, youth clubs, community centers and community based organizations. The program benefits from a common text book on shared water issues, called WaterCare. It is a text book written by Israeli, Palestinian and Jordanian teachers as part of the Multilateral EXACT program. It is the same text book in Arabic and Hebrew. The use of the WaterCare text book combined with field visits in the community, across to the neighboring community and regional tours held, helps participating youth understand the water issues of their community and their neighbors' community. One youth group decided to initiate a petition calling for action to improve the water reality in their and their neighbor's community. This led to all youth water trustees developing petitions specific to their cross-border issues and collecting in total over 15,000 signatures from local residents.

To both gain the trust of the community and empower youth that they can be themselves the catalyst for change, concrete projects are undertaken in each

community, led by the youth. In each community school buildings were transformed into wise-water buildings re-using grey or rainwater for the flushing of toilets and watering of school gardens, being able to cut by a third the amount of water used in the buildings. Furthermore, ecological gardens were built, creating a common environmental learning process and training among youth and serving as an example of how to handle scarce water resources. Another educational program, the building of ecological wetlands, was introduced in 2007, an effective way of cleaning sewage and other wastewater in small communities or single households. All these efforts on the one hand empower the youth to improve the environmental reality in their community by establishing the necessary knowledge and tools and on the other hand facilitate dialogue and the creation of a cooperative knowledge on environmental hazards and possible solutions.

The next group of stakeholders is the adults of the respective communities whose support and belief in the project is essential for its success. Their involvement in the project makes them not only partners of the NGO but in fact defenders of cooperation and of reconciliation efforts. Adult forums have been created, offering a platform for discussion with local professionals and planners on environmental problems and possible solutions. In the partnering communities Tulkarem and Emek Hefer the received support of the local community by the mayors was fundamental for their motivation to move forward in the issue of sewage cooperation. In the communities around the Dead Sea the shared problem of the fly plague is being discussed and the idea of composting manure has been developed. The Jordan River communities are very much involved in the process of establishing a Peace Park in the area of the former Rotenberg hydropower station whose cross-border management will not only improve and deepen the relationships across the border but also bring eco-tourism and therewith economic development to the region. The concrete realization of ideas, visible to the whole community, is of main importance within the project framework. Prosperities play an important role in the building of trust first of all in the NGO, the project, its ideas and ideals and later within and between the communities. Through exchange and ongoing cooperation between the locals of the neighboring communities a common dedication to the solution of shared environmental problems is established which fosters the creation of a desired common responsibility and vision for the future.

The idea of the Neighbors' Path was developed by the adult's forum in one of the communities of the GWN project, Tzur Hadassah, and is today implemented in all the other 16 communities participating in the project. A trail is established during whose visit the natural and cultural heritage of each one of the GWN communities is shown. Following the path of water, ending at the border, the trail highlights the connection between the communities and their water resources, revealing degradation and pollution, and provides insights to the water reality across the political divide. The Neighbors' Path emphasizes the need for cross-border solutions

in protecting water resources by displaying the mutual dependence on and interrelation between the water resources. The idea behind the project is to mobilize the local community in support of cross-border cooperation and the protection of the local ecosystem and to promote local entrepreneurship. The involvement of local businesses not only deepens the locals' involvement in the GWN project but also generates alternative income from the tourism visitation of the path. The Neighbors' Path aims at attracting local, national and foreign tourists showcasing the benefits of cooperation. At this stage of the project the main focus lies in getting local residents, students and adults, and people from the big cities to undertake tours in their own country to get to know the water and environment reality of their own and the neighboring societies. The goal is to carry out 30 tours in each and every community over the coming two years [2009–2010]. At the same time interested groups from Europe and the USA will visit the different communities' paths while participating in a regional cross-border tour. The communities will be able to benefit economically from these visitations.

Stemming from the grassroots the Neighbors' Path has the potential to develop into a nation-wide example for successful cross-border cooperation. It includes many of the different aspects of environmental peacebuilding: Firstly, it highlights the interdependence of environmental issues and creates cooperative knowledge on environmental issues whereby it establishes a feeling of a shared region and a shared responsibility for the present and future situation. Secondly, it strengthens the linkages between the partnering communities by creating shared gains and benefits. And finally it educates local and foreign people on the environment and cooperation and supports the process of changing perceptions towards these issues.

The third group of stakeholders is the mayors. The importance of the involvement of mid-range leaders has been mentioned already in chapter 5.1.2. Being located in a position between the grassroots and the top-level leaders they are not only able to make political statements and raise political attention for the joint efforts but also they act as ambassadors for the vision of a shared future. Events such as the Big Jump—mayors of the Jordan River Valley jumping together in the waters of the Yarmouk River—are on the one hand very effective in raising public awareness and interest in the ongoing disappearance of the Jordan River and the urgent necessity of its rehabilitation and on the other hand act as an official and operative statement that cooperation and a peaceful get-together in fact is possible.

[In 2008] for the first time the partnering municipalities Tulkarem and Emek Hefer are cooperating on the issue of olive mill waste. Until now the waste from the olive mills located in the Tulkarem area was dumped into the Alexander River which flows from Tulkarem through Emek Hefer into the Mediterranean, polluting not only the river and killing flora and fauna in the river bed but also the sea and the coastline. Today the waste from the mills is placed in a truck and taken to Israel for treatment[,] reducing to a big extent the pollution of the shared water resource.

The success of this endeavor is owed on the one hand to the initiative of the local field staff, the project coordinators and planners but moreover also to the local stakeholders within the municipalities. Due to ongoing cooperation between the neighboring communities trust has been built over the years, mutual trust that facilitates and simplifies the implementation of such a cross-border project and is the cornerstone for its success. People from both communities were committed to realize shared goals and now mutually benefit from the reached gains. The recognition of the shared responsibility for the present and future situation has been fruitful.

5.3.1 Evaluation of the GWN Project

In order to assess the GWN project from a more internal perspective a questionnaire was handed out to the Palestinian, Jordanian and Israeli field staff and to the water trustees (youth). The results help to evaluate the project and its contribution to the building of peace in the area and provide us with valuable local suggestions and inputs on how to possibly upgrade the project framework.

The field staff questionnaire was answered by 13 people, all working locally in the different communities of the GWN project. The 13 are made up of five Jewish Israelis, four Palestinians, three Jordanians and one Arab-Israeli. The youth questionnaire was answered by 27 water trustees, 9 Jordanians, 3 Arab-Israelis, 5 Palestinians and 10 Jewish Israelis.

In general, all the field staff agree that the GWN project has led to a better understanding of environmental problems within his/her community. More efforts have to be taken to actually improve the environmental situation satisfyingly in each and every community, only half of the field staff assuring that the environmental situation in her/his community was very much changed indeed since the involvement in the project. However this is partly to trace back to the fact that six of the communities have been integrated in the GWN project only since 2005. Asking about the actual changes and improvements that have been taking place in the communities[,] all the field staff mentions the “green thinking” that has been dispersed in the communities. Children, adults and even the municipalities have much greater awareness of nature in general and particular environmental issues that constitute a risk for the community. Moreover they are all involved in concrete environmental projects and therefore carry a certain kind of responsibility. Many field staff emphasize the importance of the improved water supply in schools and the ecological gardens that support the environmental education and contribute to the understanding of the water reality. Other noted improvements are for instance the prevention from further environmental destruction by Israeli communities in Wadi Fukin, the coordination of waste disposal in Baqa, the improvement of the water quality of the shared Alexander River, the advancement of agriculture, wise water use (farmers, schools) and many others.

Asking about the difficulties to change people's attitudes towards the environment, opinions diverge. [I]t is mostly the Palestinian field staff that considers it difficult; most Jordanians and Israelis don't and therefore the NGO is seen as an essential stakeholder in this fundamental process. Everyone agrees that the project activities, the meetings between the communities, the workshops, the distribution of papers help a lot to change people's attitudes. Still most of the field staff believes that if the activities were even more numerous it would be able to reach more individuals and hence be more effective.

Changing the behavior towards the environment is a long-winded process; achievements are visible only after a certain period of time. This is definitely being felt in all the communities. Still the field staff is optimistic, especially because environmental issues are becoming part of the public discourse and environmentally friendly ideas are being produced within the communities. Positive changes are obvious especially with schoolchildren as they are enjoying environmental education and participating in different projects. Children's awareness and action may furthermore have positive impacts on the whole family and household.

The GWN project definitely leads to a better understanding of the communities' shared environmental problems and offers appropriate arrangements to solve them. Most of the field staff thinks that the project very much offers solutions to common environmental hazards. Moreover its activities indeed build connections between adverse societies, most of the respondents saying that the project helps to build trust between neighboring communities. According to the field staff the most effective activities are the development of common projects and businesses, the meetings of children and adult groups and the cooperation between the mayors.

Whether the connection between the communities will last in the future seems to be controversial although half of the field staff is positive about this. Still, the rest argues that it very much depends on the political situation. It's obvious that the newly built harmonious relationships are still contingent on political events despite cooperation and trust-building. Therefore the communities are in the need of an ongoing support, an institutional structure, as long as the conflict is there, otherwise the conflict will overpower them. The GWN project is one possibility, as a stable institution it supports the communities and fosters the institutionalization of cooperation.

Most of the respondents agree that the current political situation complicates or forms an obstacle to cooperation and that political events very much influence the possibility of building trust between the communities. Still on the whole people are convinced that the project does contribute to the building of peace in the area and that their communities are much more involved in the process of building peace since their participation in the GWN project. Very important to everyone is the process of getting to know each other, the establishment of amicable relationships, the recognition of the other side's problems and fears and the loosening of the own fears towards cooperation. Through the GWN project the other side, the neighbor

becomes a face of a human or even a friend with whom cooperation becomes possible or even desirable.

5.3.2 Water Trustees–Youth

The significance and the achievements of the GWN project become particularly apparent through the evaluation of the youth questionnaire. By learning about their own and the neighbor's water reality the youth becomes sensitized to the mutual dependence on the same water resources and the necessity for a cooperative management and shared solutions. Furthermore during youth camps the water trustees have the opportunity to get to know their counterparts, being able to establish amicable relationships and to realize that they resemble them much more than they were actually thinking. Negative stereotypes are abolished, convergence is taking place and the idea of a common future becomes imaginable. The GWN project empowers Palestinian, Jordanian and Israeli youth to influence not only the present and future environmental situation in the region but also to head for a common reconciliation process. With this the project follows the demand of sustainable development to enable future generations to meet their own needs.

In general the water trustees have a very broad knowledge of the different environmental problems their own and the other communities are facing. Most of them mention water shortage, environmental pollution, especially the pollution of rivers, wadis and groundwater and uncontrolled sewage disposal. The youth living in the Jordan River Valley and around the Dead Sea are very much concerned about the declining water level there. Many children state that due to the youth camp and the visits to different affected places they started to understand the severity of the situation and the need to take action.

The youth camps were very successful in building up relationships between the youth of the different societies, language seems to have been the main obstacle they had to overcome. All the water trustees understand the importance of cooperation if an improvement of the present situation shall be achieved.

A few citations of the water trustees may demonstrate the thoughts of the youth, what they have learned during the camp and how they want to apply this knowledge in the future.

We should organize meetings and workshops to educate and guide people how to use the water and manage it properly.

—Palestinian boy, 15 years old.

God has given us all this good and all this beauty, we have to protect this and we should even make it more beautiful.

—Arab-Israeli boy, 14 years old.

We should introduce more ideas that will bring benefits to all societies.

—Jordanian boy, 15 years old.

It is important that communities work together because only like that you can stop wars and solve problems.

—Jewish Israeli girl, 14 years old.

We should love to work together hand in hand and increase the endurance and patience.

—Jordanian boy, 15 years old.

I have learned that we, Israelis and Palestinians, are not significantly different and that to build connections between us can be a great pleasure.

—Jewish Israeli boy, 15 years old.

We should put signs to guide people how to protect our nature.

—Palestinian boy, 15 years old.

We should keep our eyes on how we are using our water at home and we should be using it in a wise way.

—Jordanian boy, 16 years old.

6. Conclusion

This paper deals with the concept of environmental peacebuilding as one possible element of building peace in regions of protracted conflict. Compared to other possible—social, political, economic or cultural—efforts in the field of peacebuilding[,], the environment has certain characteristics which turn it into an important stakeholder in the process of settling down conflict.

As environmental issues are an integral part of the basic needs of every human being, an insecure and unhealthy environment is a mutual harm borne by all the societies living together in the same ecological region. Environmental depletion and the mutual dependence on shared resources can therefore be used as a connecting element between parties to a conflict, regarding the improvement of the environmental situation as a common benefit to all the societies. Obviously nature knows no boundaries, the interdependence of natural resources requires a region-wide, cross-border management, otherwise common urgent matters such as water scarcity and the pollution of water resources may not be solved. Here lies the potential of environmental peacebuilding to contribute to the process of building peace in a region of protracted conflict.

Initiating cooperation on shared environmental issues implicates ongoing dialogue between parties to a conflict, a dialogue which offers the opportunity

to exchange different perceptions and perspectives and is a cornerstone of trust-building between societies. The establishment of cross-border societal linkages, such as the ones between the partner communities of EcoPeace's Good Water Neighbors project, facilitates the creation of shared practices, values and norms which in the long-run lead to the development of a mutual responsibility for the common ecological region, neglecting political and highlighting natural borders. In order that environmental cooperation can develop into broader forms of political cooperation and generate a social and political dialogue going beyond environmental issues[,] bottom-up community work has to be combined with top-down advocacy, incorporating the grassroots, the middle-range and the top-level leadership. The NGO EcoPeace offers a good example on how to implement this holistic approach successfully.

Environmental peacebuilding is a very new subject in the field of development and cooperation, neither a broad selection of profound theories nor case studies are available for being able to assess the potential of cooperative management of shared resources to initiate a process of amicable dialogue and reconciliation in regions of protracted conflict in general. Moreover long-time experience and research are necessary to review the results of projects in terms of building peace.

Nevertheless, efforts such as the Good Water Neighbors project may be used as a showcase of a six-year-old successful implementation of the concept of environmental peacebuilding and serve as an example for environmental security, reconciliation and peace in other regions of protracted conflict on our planet.

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DEADLY ENVIRONMENT

GLOBAL WITNESS*

Executive Summary

Never has it been more important to protect the environment, and never has it been more deadly. Competition for access to natural resources is intensifying against a backdrop of extreme global inequality, while humanity has already crossed several vital planetary environmental boundaries.¹ At the same time, more and more ordinary people are finding themselves on the frontline of the battle to defend their environment from corporate or state abuse, and from unsustainable exploitation.

This report shines a light on the sharp end of this rapidly worsening and poorly understood problem. The issue is notoriously under-reported, but between 2002 and 2013, we have been able to verify that 908 citizens were killed protecting rights to their land and environment. Three times as many people were killed in 2012 than 10 years previously, with the death rate rising in the past four years to an average of two activists a week. There were almost certainly more cases, but the nature of the problem makes information hard to find, and even harder to verify. However, even the known level of killings is on a par with the more high-profile incidences of 913 journalists killed while carrying out their work in the same period.² The death rate also points to a much greater level of non-lethal violence and intimidation, which are not documented in this report.

This rapidly worsening crisis appears to be hidden in plain sight. A lack of systematic monitoring or awareness of the growing threat to environmental and

*Excerpted from Global Witness, *Deadly Environment: The Dramatic Rise in Killings of Environmental and Land Defenders*. © Global Witness Limited, 2014. Reprinted with permission.

land activists is enabling killings and a wide range of other abuses, while national governments and judicial systems are regularly failing to protect their citizens from harm.

In June 2012, Global Witness' report, *A Hidden Crisis*, was released at the Rio+20 Summit.³ Nearly 25 years after the assassination of Brazilian rubber tapper and forest activist Chico Mendes, the report warned of a growing human emergency in the world's land and forestry sectors—killings were steadily rising as protection of the environment emerged as a key battleground for human rights.

The report's findings and recommendations were noted at the summit, with UN High Commissioner for Human Rights Navi Pillay commenting, "It is shocking, but it is not a surprise to me because this is what my own office has been finding in respect of the land claims of indigenous people, not only here in Brazil but elsewhere."⁴

Yet in the month after the Rio summit, 18 environmental and land defenders were murdered across seven countries. The day the summit closed, two advocates for fishermen's rights were abducted nearby in Rio de Janeiro state. Almir Nogueira de Amorim and João Luiz Telles Penetra^{5,6,7,8} were found executed a few days later. They had long campaigned to protect Rio's fishing communities from the expansion of oil operations. To date, no-one has been held to account for their killings.

They were just two of 147 known killings of activists in 2012, making it the deadliest year on record to be defending rights to land and the environment.

In December 2014 government officials from around the world will gather for the next climate change talks in Lima, Peru. Without urgent action, they are once again likely to be discussing ways to protect the conditions for life on the planet, while the murder and intimidation of ordinary people actually defending the environment and land go ignored.

This report aims to increase awareness and improve understanding of this crisis, asks why so little is being done to address it, and makes recommendations for what must happen. Given that a lack of information on this issue was identified as a key driver of the problem in *A Hidden Crisis*, we have refined our data-gathering methodology and definition of those affected. We hope this will provide a solid foundation for future research and monitoring by Global Witness and others. We have also looked into the underlying causes of the problem globally and in specific countries, and consulted widely with partners in the field to see what work is being done, and how it can be supplemented. Finally, we have updated our statistics to cover the two years since our last publication.

People have died protecting a wide range of environmental needs and rights, but dominant themes also emerge. Many of those facing threats are ordinary people opposing land grabs, mining operations and the industrial timber trade, often forced from their homes and severely threatened by environmental devastation. Indigenous communities are particularly hard hit. In many cases, their land rights are not recognized by law or in practice, leaving them open to exploitation by powerful

economic interests who brand them as ‘anti-development’. Yet local communities are invariably struggling to secure good livelihoods as a result of their stewardship of natural resources, which is fundamental to sustainable development. Often, the first they know about a deal that goes against their interest is when the bulldozers arrive in their farms and forests.

This problem is poorly understood and addressed. Where cases are recognized or recorded, they are generally seen in isolation and not as part of a larger trend. Definitions of those affected vary widely, with the unique set of problems these defenders face often seen solely in terms of their human rights or environmental dimension. Plenty of excellent and highly courageous work is being done by NGOs in specific contexts, generally in a single country or region, but they need more and better support from outside. A key theme emerging from our consultation process was the view that a more coordinated, concerted effort is required from governments, civil society and international bodies such as the UN to monitor and tackle this crisis as a global phenomenon in its own right.

Our analysis highlights an endemic culture of impunity, which national governments and their aid donors have a responsibility to address. Often, defenders face threats from the very people supposed to protect them—a number of cases involve state security forces, often in collaboration with corporations and private landowners. The lack of political will to ensure large resource deals are done fairly and openly appears matched by the lack of political will to deliver justice for those killed in resulting conflicts. Evidence suggests that responsibility rarely only lies with the person pulling the trigger—complex and secretive networks of vested interests ultimately lie behind these crimes. Just 10 perpetrators are known to have been tried, convicted and punished between 2002 and 2013⁹—around one per cent of the overall incidence of known killings.

This lack of redress for victims and their families has an additional silencing effect on environmental activism, in turn deterring others from protecting rights to the environment and land. In the words of Isolete Wichinieski, National Coordinator of the Comissão Pastoral da Terra (CPT) in Brazil, “what feeds the violence is the impunity.”¹⁰

Weak understanding of rights or ability to exercise them is one of the main reasons why environment and land activists are one of the most vulnerable groups of human rights defenders,¹¹ according to Margaret Sekaggya, UN Special Rapporteur on the situation of Human Rights Defenders: “[they] are particularly disadvantaged due to the often-limited knowledge they have about their rights and lack of information on how to claim them, scarce resources and weak organizational capacity.”¹²

Meanwhile, UN Independent Expert on Human Rights and the Environment John Knox commented to Global Witness:

Human rights only have meaning if people are able to exercise them. Environmental human rights defenders work to ensure that we live in an environment that enables us to

enjoy our basic rights, including rights to life and health. The international community must do more to protect them from the violence and harassment they face as a result.¹³

The aim of this report is to push for this to happen, firstly by making the problem more visible and urgent for governments, policymakers and the wider public. We have included extended case studies that focus on countries where the issue is particularly serious, in the Philippine and Brazil, to help better understand these contexts. Brazil is particularly badly affected, accounting for over half the global total of deaths from 2002–2013.

These findings are very likely just the tip of the iceberg in two important respects. Firstly, rising fatalities are the most acute and measurable end of a range of threats including intimidation, violence, stigmatization and criminalization. However, lack of public information around these threats and security implications for those in danger make it very difficult to track and systematize this data.

Secondly, there are without doubt more cases than we have been able to verify. Because of the live, under-recognized nature of this problem, an exhaustive global analysis of the situation is not possible. For example, African countries such as Nigeria, Democratic Republic of Congo, Central African Republic and Zimbabwe that are enduring resource-fueled unrest are highly likely to be affected, but information is almost impossible to gain without detailed field investigations. In future, Global Witness hopes to carry out such work to further bring this issue to national and international attention.

But others must act as well, and they must do so now. What we can say with grim conviction is that we have a dramatically worsening global situation, and that national governments, companies and the international community must do much more to stop the violence, intimidation and murder of those we should be celebrating as heroes.

Recommendations

These killings are increasing because competition for resources is intensifying in a global economy built around soaring consumption and growth, even as hundreds of millions go without enough. They are going unrecognized because of a lack of visibility and accountability. The rights of environmental and land defenders must be recognized and respected; they should be able to carry out their work without fear of killing, persecution, intimidation or threats to their lives, families or colleagues. National governments, civil society and international human rights bodies should properly monitor abuses against and killings of such activists, and ensure that those responsible are brought to justice. Companies must carry out effective checks on their operations and supply chains to make sure they do no harm.

The work of environmental and land defenders to protect indigenous land rights, opposing powerful economic interests and protesting the activities of extractive industries and development projects leaves them particularly vulnerable to abuse, and therefore they should be given special attention. The often isolated, rural context of their struggle, poor resources and lack of understanding of their rights adds to their exposure.

National Governments, Including Those in Acutely Affected Countries Such as Brazil and the Philippines, Must Take Immediate Steps To:

- Publicly reaffirm and recognize the important work that environmental and land defenders do, and take steps to respect, protect and promote their rights, as stipulated by the UN Special Rapporteur on Human Rights Defenders in 2011.¹⁴
- Implement and respect all provisions set out in the UN Declaration on Human Rights Defenders;¹⁵ with special attention to a state's duty and responsibility to protect, promote and implement all human rights including the right to a safe and healthy environment.
- Ensure prompt and impartial investigations into allegations of attacks and violations against defenders, and carry out appropriate redress and reparation for victims.
- Recognize and implement the right of communities potentially affected by investment and extractive projects to genuinely free, prior and informed consent before a deal is done.
- Sign and adhere to (where eligible) the Aarhus Convention,¹⁶ giving citizens the right to participate in environmental decision-making, to have access to environmental information and to seek justice in environmental matters. In addition, the Convention should be opened up for signature and ratification by all UN member states.
- Address the heightened risk posed to environmental and land defenders in the UN Human Rights Council's Universal Periodic Review process, both in their own reports and in their recommendations to other states' reports.

All Governments Must:

- Take firm and decisive steps to address the heightened threat posed to environmental and land defenders. In the first instance we recommend calling for a UN Human Rights Council resolution to this effect and ensuring all member states provide improved and properly resourced protection plans.

International Bodies:

- The Human Rights Council's Special Procedures, specifically those mandated to Human Rights Defenders, Indigenous Peoples, Business and Human Rights, Environment and Human Rights and Extrajudicial Killings should address the increase in risk posed to environmental and land defenders in their reporting procedures.
- The ASEAN (Association of South East Asian Nations) Human Rights Commission and African Commission on Human and Peoples' Rights should establish a mechanism based on the Inter-American Human Rights Commission's framework to provide emergency protection for human rights defenders ("precautionary measures").

Companies Operating in Areas Where Environmental and Land Defenders Are Under Threat Must Take Immediate Steps To:

- Refuse to make any investment decision or project plan unless genuinely free, prior and informed consent is given by potentially affected communities.
- Refrain from operating in militarized areas, or using private security where there are credible allegations of prior involvement in human rights violations.
- Implement due diligence checks on supply chains to ensure that their purchasing policies are not linked to companies whose operations cause social and environmental damage.
- Adopt and implement the Voluntary Principles on Human Rights and Security,¹⁷ the UN's Guiding Principles for Business and Human Rights¹⁸ and other relevant international human rights standards.
- Adopt and implement the Voluntary Guidelines on the Responsible Governance of Tenure of Land, Fisheries and Forests.¹⁹

NOTES

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3. Global Witness (2012). *A Hidden Crisis*. Available from http://www.globalwitness.org/sites/default/files/A_hidden_crisis.pdf (Accessed 5 April 2014).

4. Navi Pillay, UN High Commissioner for Human Rights, at OHCHR-UNEP Joint Side Event on Human Rights in Sustainable Development at Rio+20 Summit, 19th June 2012.

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6. Case summary provided to Global Witness by Documentation Unit of Comissão Pastoral de Terra, March 2014.

7. Front Line Defenders (2012). Brazil: Killing of human rights defenders Mr Almir Nogueira de Amorim and Mr João Luiz Telles Penetra [online]. Available from: <https://www.frontlinedefenders.org/en> [Editors updated].

8. Friends of the Earth International (2012). *Brazil: Killing of human rights defenders Mr Almir Nogueira de Amorim and Mr João Luiz Telles Penetra* [online]. Available from: <https://www.frontlinedefenders.org/en> [Editors updated] (Accessed 2 March 2014).

9. Ten people are known to have been convicted of the murders of seven defenders. We know that a further 34 have been arrested and are facing charges for the murders of 16 defenders.

10. Global Witness interview with Isolete Wichinieski, National Coordinator, Comissão Pastoral de Terra, 14 March 2014.

11. UN Human Rights Council (2007). *Report submitted by the Special Representative of the Secretary-General on Human Rights defenders, Hina Jilani* (A/HRC/4/37), p.13.

12. UN Human Rights Council (2011). *Report of the Special Rapporteur on the situation of human rights defenders, Margaret Sekaggya*, (A/HRC/19/55). Available from: <http://www.ohchr.org/EN/NewsEvents/Pages/EnvironmentalHumanRightsDefenders.aspx> (Accessed 14 March 2014).

13. Global Witness email interview with Professor John H. Knox, UN Independent Expert on Human Rights and the Environment, 28 March 2014.

14. UN Human Rights Council (2011). Report of the Special Rapporteur on the situation of Human Rights Defenders, Margaret Sekaggya, (A/HRC/19/55), para 124.

15. 1998 General Assembly Resolution A/RES/53/144. *UN Declaration on Human Rights Defenders*. Available from: <https://www.ohchr.org/en/issues/srhrdefenders/pages/declaration.aspx> [Editors updated].

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17. *Voluntary Principles on Human Rights and Security* (2000). Available from: <http://www.voluntaryprinciples.org/what-are-the-voluntary-principles/> (Accessed 1 April 2014).

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19. Food and Agricultural Organisation of the United Nations (UNFAO) (2012). *Voluntary Guidelines on the Responsible Governance of Tenure of Land, Fisheries and Forests in the Context of National Food Security* [online]. Available from: <http://www.fao.org/docrep/016/i2801e/i2801e.pdf> (Accessed 28 March 2014).

PART SIX

ECOLOGICAL JUSTICE



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SOME OF THE MAIN CONTROVERSIES SURROUNDING THE PARADIGMS OF SUSTAINABLE development and environmental security involve questions of justice. Critics have raised concerns that these paradigms may obscure the fact that the effects of environmental change are distributed unevenly across different social groups. Moreover, questions of justice are raised not only by the effects of pollution and ecosystem destruction, but also by the distributive consequences of environmental policy responses, some of which may deepen inequality or the maldistribution of power in society.

Concerns about the relationship between environmental protection and social equity have been voiced since the Stockholm conference first placed the environment on the international agenda in 1972.¹ As the pace of environmental degradation has accelerated, and as policy responses to environmental problems have grown more complex and ambitious, the question of how various forms of environmental change affect different social groups has become increasingly central to environmental debates. Today, the link between ecology and justice is articulated by a diverse array of voices: people of color in cities throughout the United States are challenging the “environmental racism” of concentrating toxic facilities in minority communities; rural women in India are protesting the impacts of deforestation and large-dam construction on their lives and communities; green activists across the industrialized world are framing climate change as a matter of injustice against poor people, vulnerable communities, and future generations; indigenous peoples are organizing to reclaim their lands and their traditions as an alternative to the ecological onslaught of modernity.²

Given this diversity of causes and concerns, is it possible to have a single paradigm of ecological justice, based on a common set of core arguments? While there are many different visions of an ecologically just world, a number of common themes may be identified: a core concern for how the effects of environmental harm and the effects of policy responses are distributed in society; attention to the role of social structure—including differences across race, class, gender identity, region, age—in mediating exposure to environmental harm or access to solutions; the close links between the control of nature and the control of people; and the need for fundamental transformation of politics, economics, and society if we are to find solutions that are at once both environmentally sustainable and socially equitable.

Justice concerns have a long-standing pedigree in global environmental politics. The question of justice among nations and the great North–South disparity in power and wealth was a central dispute at the Stockholm conference (see Chapter 2 by Castro in Part One). Twenty years later, at the Rio Earth Summit, the question had not been resolved. As Mahathir Mohamad, at that time Malaysia’s prime minister, told the assembled delegates at the Rio conference:

We know that the 25 per cent of the world population who are rich consume 85 per cent of its wealth and produce 90 per cent of its waste. Mathematically speaking, if the rich reduce their wasteful consumption by 25 per cent, worldwide pollution will be reduced by 22.5 per cent. But if the poor 75 per cent reduce consumption totally and disappear from this earth altogether, the reduction in pollution will only be by 10 per cent.

It is what the rich do that counts, not what the poor do, however much they do it. . . . The rich will not accept a progressive and meaningful cutback in their emissions of carbon dioxide and other greenhouse gases because it will be a cost to them and retard their progress. Yet they expect the poor people of the developing countries to stifle even their minute growth as if it will cost them nothing. . . . Malaysia will do what can reasonably be expected of it for the environment.³

Despite optimism at the 1992 Earth Summit that “sustainable development” had merged the conflicting concerns of the North and the South with regard to environment and development, distributional issues have remained central to the global environmental debate. The question of justice applies not only to who should pay the costs of environmental protection but also who holds decision-making power and who bears historical responsibility for the planet’s predicament.

A key insight of the eco-justice paradigm, however, is that the problem is not simply one of equity between sovereign nations. Power and risk are distributed unequally not only among nations but also within them, given social divisions based on race, class, gender, ethnicity, and region. Inequalities in power, voice, access to resources, and access to decision-making systems are issues at all levels: in interstate negotiations, within societies, in the workings of intergovernmental organizations, and even in dealings among environmentalists and other civil-society actors.

We begin this section with a report from a leading grassroots development organization, Oxfam International, which examines links between climate change and human rights (Chapter 26). The report identifies several ways that human rights are threatened by climate change, and advocates for a “rights-centered” response. Historically, the relationship between human rights and the environment has been complex and, at times, uneasy. Until fairly recently, many human rights activists were uncomfortable expanding the definition of human rights to include “socioeconomic” rights such as environmental quality alongside more traditional concepts

of political rights and civil liberties. At the same time, many environmental justice advocates have viewed a human right to, say, clean water or breathable air as simply a minimum standard, falling far short of the desired result of social equity. Others have worried that rights-based campaigns can be too human-centered and individualistic. Nonetheless, the many substantive connections between climate change and rights at risk that Oxfam identifies call our attention to what is at stake, and underscore the power of linking justice and sustainability.

If the unequal distribution of environmental harm forms one key strand of eco-justice thought and activism, then unequal access to natural resources is another. Chapter 27, by Sylvia Kay and Jenny Franco of the Transnational Institute, examines ongoing, dramatic change in access to perhaps the most precious natural resource of all—water. As demand for water increases, as supplies in some areas grow more scarce, and as ecosystem harm and climate change put water supplies at risk, we are seeing an increase in political and economic competition for the resource. While talk of looming “water wars” may be overblown (see Part Five), Kay and Franco argue that “water grabbing” has become a significant global trend. While there is nothing new about powerful actors grabbing resources, the authors note that there is more at work here than simply the ‘visible fist’ of transnational economic power. Global financial instability and its impact on food prices has deepened the incentive to lock in water supplies, and both national legal frameworks and evolving global capital markets have made it easier to do so. In the process, widespread disregard for communities and livelihoods that rely upon the “grabbed” resource can produce wrenching consequences for those who lose access. This is particularly the case for poor communities in rural areas, whose livelihoods relying upon smallholder or communal agriculture, and for the poor in urban and peri-urban areas, many of whom live in “informal” communities that lack secure rights of resource access or state recognition.

Another important theme of the eco-justice paradigm is that “solutions” to environmental problems also may be unjust, both locally and globally, raising questions about whether they are solutions at all and whose problems they are actually solving. This idea is evident in indigenous peoples’ rejection of dialogues between developers and environmental organizations that exclude the communities most affected (see Chapter 5 by COICA in Part One). Questions arise when “solutions” involve dramatic changes for local patterns of land use, land tenure, property rights, and access to nature. A contemporary example is the impact of supposedly “sustainable” biofuels production for the European market on land rights and poverty in West Africa. As Liberian environmental activist Silas Kpanan’Ayoung Siakor points out in Chapter 28, the cost of expanding production of the agricultural inputs for so-called green biofuels has been to push poor farmers off the land. Siakor’s critique is hardly an anti-environmental rant: in 2006 he received the prestigious Goldman Environmental Prize for his courageous work in documenting the links among timber cutting, illicit revenues, the arms trade, and Liberia’s devastating civil war. He

argues that we should challenge the “sustainability” of a renewable-energy global commodity chain that relies on “land grabs,” social displacement, and deepening poverty to feed the world’s consumption machine with nominally green fuels.

Similar controversies surround REDD+, the global initiative to reduce greenhouse emissions from deforestation and forest degradation. Deforestation plays a nontrivial role in greenhouse-gas emissions (perhaps as much as 20 percent). As the world’s effort to negotiate limits on the use of fossil fuels has stalled, some have argued that land-use mechanisms are an increasingly important avenue for climate-change mitigation efforts. The idea behind REDD+ is to create financial incentives for such land protections, either through development assistance or by allowing polluters to meet regulatory requirements by investing in ecosystem-protection schemes far from the site of their polluting activities. Such payment-for-ecosystem schemes remain controversial, despite their obvious potential for carbon sequestration. They shift the locus of climate responses from the climate problem’s origin in the world’s industrialized urban centers to rural areas in developing countries, and they threaten (once again) to impose “solutions” without the voice of people who will primarily pay the cost of adjustment. While some environmental organizations and advocacy campaigns have adapted their approaches to center concerns about participation and local voices, questions remain about the commitment of the environmental movement as a whole to involving local communities.⁴

The eco-justice paradigm contributes another important insight: in all of this—unequal exposure to harm from pollution, unequal access to resources, unequal power and voice in policy responses—the problem is not simply a matter of the gap between rich and poor. Gender identity is another fundamental element of social structure that shapes and differentiates people’s life opportunities, including how they relate to the natural world. As the devastating tsunami that slammed into Southeast Asia in December 2004 receded, a troubling pattern emerged: the floodwaters had brought death and injury disproportionately to women and girls. A report documenting gender disparities in the tsunami’s consequences in several villages in India, Sri Lanka, and Indonesia offered this explanation:

Some of the causes of these patterns are similar across the region: many women died because they stayed behind to look for their children and other relatives; men more often than women can swim; men more often than women can climb trees. But differences too are important: women in Aceh, for example, traditionally have a high level of participation in the labor force, but the wave struck on a Sunday morning when they were at home and the men were out on errands away from the seafont. Women in India play a major role in fishing and were waiting on the shore for the fishermen to bring in the catch, which they would then process and sell in the local market. In Sri Lanka in Batticaloa District, the tsunami hit at the hour women on the east coast usually took their baths in the sea.⁵

If, as many climate scientists fear, climate change brings with it an increase in the frequency and intensity of extreme weather events, then programs that promote disaster risk reduction become an essential element of climate-change adaptation.

Social structure does more than simply expose some groups to great harm than others. It also conditions people's access to policy responses. Thus, if the men in a community frequent "public" spaces while women remain closer to the home, then an information campaign for disaster risk reduction that posts its notices in the town square will not reach women as readily as, say, a radio campaign. Gendered social relations must be recognized, and empowering solutions identified, across the full cycle of engagement, from risk reduction programs to disaster response and recovery.

Importantly, people are not simply passive recipients of the hand they are dealt in life by prevailing social structures such as race, class, gender, or ethnicity. These forms of social differentiation interact with identity in dynamic ways, influencing how we understand ourselves and our roles in society. Chapter 29 by researchers Shannon Bell and Yvonne Braun examines how gender identity shapes the mobilization of environmental activists in the Appalachian region of the Eastern United States. The article begins with a puzzle—why are most activists women?—and from that starting point teases out the ways that gender, regional identity, and the political economy of coal influences who mobilizes for a just and sustainable future, and why.

We conclude this section with a short essay by the economist and Nobel laureate Joseph Stiglitz (Chapter 30), who points to yet another element of the environment–justice link: the need for a fair society as a platform from which to pursue the sometimes difficult challenges of sustainability. Stiglitz argues that a certain degree of perceived fairness in society is likely to be a prerequisite for willingness to participate in the project of building a sustainable future. If society pursues policies (environmental or otherwise) that erode social solidarity, then the capacity to make the kinds of collective adjustments that are needed is one more casualty of growing inequality. If Stiglitz is correct, then environmental policies that worsen inequalities rather than addressing them may be moving us further from sustainability, even if they succeed in imposing short-term environmental gains.

If there is a unifying theme across the voices in this section, it is to reject the notion that effective environmental protection requires increasingly authoritarian governance. On the contrary, these authors argue that genuine sustainability and meaningful environmental security will require responses to environmental problems that are not only ecologically effective but also socially just in their impacts and participatory in the ways they are conceived and executed.

Thinking Critically

1. After reading the essays in this section, are you persuaded that the environment is a justice issue? Must there be justice for there to be environmental protection? Are there difficult trade-offs to be made between these two values? If so, what are they? If not, what are the core elements of a strategy that integrates the pursuit of environmental and justice-related concerns?

2. Do you accept the claim that some types of global environmental protection impose an unfair burden on the global South or distinct communities therein? Does this mean that the resistance of many governments of the South to particular forms of international environmental protection has the effect of promoting social justice? What might the Coordinating Body for the Indigenous Peoples' Organizations of the Amazon Basin (COICA) (Chapter 5 in Part One) have to say to the head of state of a developing country who claimed that primary responsibility rested with the global North, as Mahathir Mohamad of Malaysia stated at the 1992 Earth Summit? How might the latter respond?
3. Governments focused on the problem of climate change spent many years bargaining over which countries must cut their greenhouse-gas emissions and by how much. When this approach failed, they shifted to a more flexible process of aggregating voluntary national commitments under the Paris Agreement. Does Oxfam's human-rights analysis of the climate change problem suggest a different or expanded agenda for international negotiations? What additional responsibilities of nations, individually and collectively, should be identified?
4. Are the views of globalization in this section consistent with that of Shapiro's chapter (8) discussing China in Part Two? How are they similar or different? Which of the justice concerns identified in this section are illustrated by her rendering of the case of China?
5. Think about specific environmental initiatives or campaigns with which you are familiar, including those on your campus if you are a college student. Do they cut across various aspects of social structure and collective identity, or connect primarily to the actions and concerns of distinct communities? Should they do so?
6. Contrast Stiglitz's ideas about the need for social transformation with those of Wahl (Chapter 20 in Part Four). Are they talking about the same type of transformation? Are there tensions between Wahl's vision of a transformative culture and Stiglitz's concern for equality? Synergies? What would a transformative path that combined their visions look like?

NOTES

1. For a discussion of some of these issues prior to the Stockholm conference, see United Nations, *Development and Environment: Report and Working Papers of a Panel of Experts Convened by the Secretary General of the U.N. Conference on the Human Environment*, Founex, Switzerland, June 4–12, 1971.

2. Some classic works on environmental injustices include Robert Bullard, *Dumping in Dixie: Race, Class, and Environmental Quality* (Boulder, CO: Westview Press, 2008); Vandana Shiva, *Staying Alive: Women, Ecology and Development* (Berkeley, CA: North Atlantic Books, 2016); and Rob Nixon, *Slow Violence and the Environmentalism of the Poor* (Cambridge, MA: Harvard University Press, 2013).

3. Mahathir Mohamad, "Statement to the U.N. Conference on Environment and Development," *Environmental Policy and Law* vol. 22 no. 4 (1992): 232. [Editors' note: Mahathir Mohamad became prime minister of Malaysia again in 2018 after 15 years out of office. His previous term was 1981–2003.]

4. Mac Chapin, "A Challenge to Conservationists," *World Watch* vol. 17 no. 6 (November/December 2004): 17–31.

5. Oxfam International, "The Tsunami's Impact on Women," *Oxfam Briefing Note*, March 2005.

CLIMATE WRONGS AND HUMAN RIGHTS: PUTTING PEOPLE AT THE HEART OF CLIMATE-CHANGE POLICY

OXFAM INTERNATIONAL*

In failing to tackle climate change with urgency, rich countries are effectively violating the human rights of millions of the world's poorest people. Excessive greenhouse-gas emissions are—with scientific certainty—leading to floods, droughts, hurricanes, sea-level rise, and seasonal unpredictability. These impacts are undermining millions of people's rights to life, security, food, water, health, shelter and culture. Such human-rights violations could never truly be remedied in courts of law. Human-rights principles must be put at the heart of international climate-change policy making now, in order to stop this irreversible damage to humanity's future.

The Growing Evidence of Climate Wrongs

Climate change is set to undermine human rights on a massive scale. International human-rights law states that, 'In no case may a people be deprived of its own means of subsistence'. But—as the Intergovernmental Panel on Climate Change has documented in detail—excessive greenhouse-gas emissions, primarily from rich

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countries, are depriving millions of people of the very water, food, soil, and land on which they subsist (See Table 26.1).

TABLE 26.1 How climate change undermines human rights

Human-rights norms in international law	Current and projected impacts of climate change upon human rights
The Right to Life and Security <i>"Everyone has the right to life, liberty and security of person."</i> (UDHR, Article 3)	• There will be more deaths, disease, and injury due to the increasing frequency and intensity of heat waves, floods, storms, fires, and droughts. • Rising sea levels will increase the risk of death and injury by drowning. Up to 20 per cent of the world's population live in river basins that are likely to be affected by increased flood hazard by the 2080s. • Heat waves are likely to increase deaths among elderly or chronically sick people, young children, and the socially isolated. Europe's 2003 heat wave—induced by climate change—resulted in 27,000 extra deaths.*
The Right to Food <i>"The State Parties to the present Covenant, recognize the fundamental right of everyone to be free from hunger..."</i> (ICESCR, Article 11)	• Future climate change is expected to put close to 50 million more people at risk of hunger by 2020, and an additional 132 million people by 2050. • In Africa, shrinking arable land, shorter growing seasons, and lower crop yields will exacerbate malnutrition. In some countries, yields from rain-fed agriculture could fall by 50 per cent as soon as 2020. • In parts of Asia, food security will be threatened due to water shortages and rising temperatures. Crop yields could fall by up to 30 per cent in Central and South Asia by 2050.
The Right to Subsistence <i>"Everyone has the right to a standard of living adequate for the health and well-being of himself and of his family, including food, clothing, housing...."</i> (UDHR, Article 25) <i>"In no case may a people be deprived of its own means of subsistence."</i> (ICCPR, Article 1.2 and ICESCR, Article 1.2)	• Water: By 2020, between 75 million and 250 million people in Africa are likely to face greater water stress due to climate change. Reduced water flow from mountain glaciers could affect up to one billion people in Asia by the 2050s. • Natural resources: Approximately 20–30 per cent of plant and animal species assessed so far are likely to be at increased risk of extinction if average global temperatures rise more than 1.5–2.5°C. Coral bleaching and coastal erosion will affect fish stocks—currently the primary source of animal protein for one billion people. • Property and shelter: Millions more people risk facing annual floods due to sea-level rise by the 2080s, mostly in the mega-deltas of Asia and Africa. On small islands, too, sea-level rise is expected to exacerbate inundation, storm surge, and erosion, threatening vital infrastructure, settlements, and facilities that support the livelihoods of island communities.
The Right to Health <i>"The State Parties to the present Covenant recognize the right of everyone to the enjoyment of the highest attainable standard of physical and mental health."</i> (ICESCR, Article 12)	• Child malnutrition will increase, damaging growth and development prospects for millions of children. • Increasing floods and droughts will lead to more cases of diarrhea and cholera. Over 150,000 people are currently estimated to die each year from diarrhea, malaria, and malnutrition caused by climate change.* • Changing temperatures will cause some infectious diseases to spread into new areas. It is estimated that 220–400 million more people will be at risk of malaria. The risk of dengue fever is estimated to reach 3.5 billion people by 2085 due to climate change.

Sources: Universal Declaration of Human Rights (UDHR); International Covenant on Civil and Political Rights (ICCPR); International Covenant on Economic, Social and Cultural Rights (ICESCR); the Intergovernmental Panel on Climate Change (IPCC) 2007, Working Group II; *World Health Organisation.

Twenty-three rich countries—including the USA, western Europe, Canada, Australia and Japan—are to just 14 per cent of the world's population, but have produced 60 per cent of the world's carbon emissions since 1850, and they still produce 40 per cent of annual carbon emissions today. In 1992, these countries committed to return their annual emissions to 1990 levels by 2000. Instead, by 2005 they had allowed their collective emissions to rise more than 10 per cent above 1990 levels—with increases exceeding 15 per cent in Canada, Greece, Ireland, New Zealand, Portugal, Spain, and the USA. Their collective failure to act has raised the scientific risk—and the political risk of global warming exceeding the critical threshold of 2°C.

Economics—which influences many current climate-policy debates—approaches decision making by weighing up competing costs and benefits. But in a global context, how can the financial costs of cutting emissions in the richest countries be compared with the human costs of climate change for the world's poorest people? The implications of such a trade-off are appalling.

Human rights provide an alternative to the assumption that everything—from carbon to malnutrition—can be priced, compared, and traded. They are a fundamental moral claim each person has to life's essentials—such as food, water, shelter, and security—no matter how much or how little money or power they have.

Litigate or Negotiate? Both Paths Lead to Human Rights

When the Universal Declaration of Human Rights was drawn up in 1948, its authors could not have imagined the complex global interconnectedness that climate change would lead to today. But now it is clear that the devastating international impacts of greenhouse-gas emissions give countries undeniable international responsibility for the human-rights consequences of their policies.

Human-rights laws and institutions need to evolve fast to rise to this unprecedented challenge. Creative human-rights lawyers could push to have courts recognize future injury (because of the delay between emissions and climatic events), and joint liability (since emissions come from multiple sources). They could likewise seek to clarify and activate international legal obligations (due to the far-reaching international impacts of greenhouse-gas emissions), and call for an international venue (perhaps under the UNFCCC) where people whose rights are effectively being violated by other countries' emissions can seek some form of redress.

The world cannot wait, however, for human-rights law to evolve in order to protect poor people from climate change. The norms and principles of human rights

must provide strong guidance now for the ongoing negotiations under the UNFCCC, for national policy making, and also for corporations whose activities have significant influence over future emissions and adaptation prospects. Sixty years on from the Universal Declaration, a new vision is needed for a rights-centered approach to tackling climate change (Table 26.2).

TABLE 26.2 A rights-centered approach to climate-change policy making

Human rights principles for policy making:	Mitigation—reducing greenhouse gas emissions: essential to respect and protect human rights	Adaptation—building resilience to unavoidable impacts: now essential as a remedy for failing to respect and protect human rights
Guarantee a core minimum—a basic standard of rights for all	States must implement national and international mitigation targets and policies that minimize the risk of exceeding 2°C warming	States must target disaster relief and adaptation initiatives to safeguard the essential claims—to life, food, water, shelter, and health—of the most vulnerable people
Focus on vulnerability and those whose rights are most at risk	States must ensure their mitigation policies do not undermine vulnerable people's rights, domestically or overseas	States must ensure that support for adaptation is channeled to the most vulnerable communities, such as women, minority groups, and children
Ensure participation of people whose rights are affected by policies	States must ensure that the most affected communities and groups have effective voice in setting national and international mitigation targets and policies	States must ensure that the most affected communities participate in, and have ownership of, the design and implementation of adaptation initiatives in order to safeguard their rights
Provide accountability and remedies for violations	States must report publicly on results in implementing mitigation targets and policies	States must ensure effective and transparent governance of national and international adaptation strategies and funds
Deliver on international cooperation to realize rights worldwide	States must take on emissions cuts in line with their national responsibility for causing climate change and their capability to assist	States must finance international adaptation based on their national responsibility for causing climate change and their capability to assist policies for tackling climate change

Source: Table created by authors

Based on these principles, Oxfam calls for urgent action on human-rights hotspots where current climate policies and negotiations are far off track:

Rich countries must:

- lead now in cutting global emissions to keep global warming well below 2°C. Global emissions must fall at least 80 per cent below 1990 levels by 2050, with rich countries delivering domestic cuts of at least 25–40 per cent by 2020.
- provide the finance needed for international adaptation. Innovative financing is urgently needed to raise at least \$50bn per year for adaptation in developing countries.
- provide the finance needed for low-carbon technologies in developing countries. Commitment to a new scale of financing must be delivered in the post-2012 regime.
- halt their biofuel policies which are undermining poor people's right to food, and leading to land and labor rights violations.

Developing countries must:

- focus their adaptation strategies on the most vulnerable people by putting poor communities at the heart of planning, addressing women's needs and interests, and providing social-protection schemes.
- have ownership in managing international adaptation funds and, in turn, must be accountable to vulnerable communities for how the finance is spent.

Companies must:

- call on governments to act with far greater urgency in cutting global emissions, and must not lobby to block effective regulation.
- take significant steps to cut their global emissions in line with keeping global warming well below 2°C.
- ensure that their mitigation or adaptation projects do not undermine people's rights, either due to the technologies used, or due to implementing them without consulting affected communities.
- go much further—if they source and sell globally—in building communities' climate resilience through their own supply-chain operations.

The ongoing climate negotiations... are the best available chance for achieving the international co-operation needed to prevent dangerous climate change and to enable communities to adapt. That is why the norms and principles of human rights must be placed at the heart of their deliberations. Indeed the impacts of climate change on the rights of the world's most vulnerable people will be the critical test of whether these negotiations succeed.

THE GLOBAL WATER GRAB: A PRIMER

SYLVIA KAY AND JENNY FRANCO*

1. What Is 'Water Grabbing'?

Water grabbing refers to situations where powerful actors are able to take control of or divert valuable water resources and watersheds for their own benefit, depriving local communities whose livelihoods often depend on these resources and ecosystems.¹ The ability to take control of such resources is linked to processes of privatization, commodification and take-over of commonly-owned resources. They transform water from a resource openly available to all into a private good whose access must be negotiated and is often based on the ability to pay. Water grabbing thus appears in many different forms, ranging from the extraction of water for large-scale food and fuel crop monocultures, to the damming of rivers for hydroelectricity, to the corporate takeover of public water resources. It also inheres in a model of development which is underwritten by a trade in virtual water.

Water grabbing is not a new phenomenon and has much in common with earlier resource grabs and what has been called the "enclosures of the commons."² The new dimension of contemporary water grabbing is that the mechanisms for appropriating and converting water resources into private goods are much more advanced and increasingly globalized, subject to international laws on foreign investment and trade. There is thus a real concern that a new generation of 'Mulhollands', the

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early 20th Century Los Angeles official who made water grabbing infamous, will profit from this scenario to the detriment of local communities and ecosystems, and at a scale that has not been seen before. In the context of a 'global water crisis,' where 700 million people in 43 countries live below the water-stress threshold of 1,700 cubic metres per person, there is an urgent need to put an end to the global water grab.³

2. What Are the Key Drivers of Water Grabbing?

Water grabbing is an expression of an economic model of development in which capital accumulation is linked to increasing control over abundant and cheap supplies of natural resources, including food, water and energy. The outbreak in 2008 of a global financial crisis accompanied by extraordinary commodity price spikes and growing financial speculation in food commodities provoked a new round of water, land and resource grabbing as governments and investors sought assurances which could not be provided by increasingly volatile and unreliable markets.⁴ It is worth examining this nexus between water, energy and food security in a little more detail.

Rising oil prices and growing concerns that a 'peak oil' period has been reached have rung alarm bells about the high dependence of modern economies on fossil fuel. The search for alternatives to non-renewable energy sources has focused extensively on agrofuels: crops such as palm oil, jatropha, sugarcane and soya, grown as a source of liquid fuel for the transport sector and for industrial use. A veritable explosion in agrofuel production has occurred in Asia, Africa and Latin America bolstered by governmental directives, such as the EU's Renewable Energy Directive (RED), and a broad range of subsidies and preferential loans.⁵ Claims that agrofuels constitute a clean and efficient energy source have however proven to be highly misleading, not least because of the vast amount of water required throughout the production cycle; from the irrigation of crops, to the washing of the harvest, to the cooling of boilers during processing. In the case of sugarcane cultivation for ethanol production, for example, 7,000 liters of water are needed to produce 12 kilograms of sugarcane, necessary to produce one litre of ethanol.⁶ This high water-intensity of agrofuel production is sometimes overlooked, with disastrous consequences for other water users.

Just as the growth in fuel crops reflects a search by states and investors for cheap and reliable energy supplies under conditions of competition and economic crisis, a similar logic underpins the appropriation of water resources for the cultivation of food crops. As food prices have spiked in recent years, an increasing number of countries and agribusiness corporations have sought to reduce their dependency on international markets by engaging directly in agricultural production. This has for

instance figured prominently in the considerations of many Gulf states where their own water resources are stretched and the rising cost of food imports is estimated to account for up to one third of the inflation experienced in the region.⁷ Appropriating land and water for food production in other countries is therefore seen as a strategy for economic stabilization and a way to hedge against future inflation. This also holds true for agri-business corporations who have shifted towards greater vertical integration in order to safeguard their profit margins and exercise greater control across the value chain.

Meanwhile, there is also the growing phenomenon in agriculture of “*flex crops*”—crops that have multiple uses (food, feed, fuel, industrial material) that can be easily and flexibly inter-changed depending on various factors including changing price signals on global markets.⁸ This includes many of today’s most prominent high intensity water users and/or native forest and watershed destroyers—soya (feed, food, biodiesel), sugarcane (food, ethanol), oil palm (food, biodiesel, commercial/industrial uses), corn (food, feed, ethanol). The flex crop sector is among the fastest growing in Latin America today, for example.⁹

Alongside flex crops, we may also be seeing a growing trend toward “flex trees”—tree monocultures that can be deployed for variable purposes, including lumber for construction and furniture, wood for wood chips and wood pellets, and (re)forestation for carbon sequestration and other so-called “environmental services”. Although the impact of tree plantations on ecosystems and on local users in terms of water (re)allocation is complex and shaped by many factors, there is growing evidence that the impacts on ecosystems and local communities can be extremely negative.¹⁰ Despite the risks, official data shows that globally the area devoted to tree plantations is growing at an average rate of about 2% annually, with the highest rates in Central and South America, the Caribbean, and Asia.¹¹

The drivers of water grabbing show how capital accumulation by corporations is intimately connected to the control of natural resources such as water. It is in this sense that one must question the tendency to turn all discussion around water, food and energy into security issues: water security, food security etc. This has the danger of bestowing a degree of legitimacy upon the private appropriation of water resources. Understanding that water grabbing has less to do with real concerns related to the availability of water, food and energy supplies (which would entail a regard for their conservation and sustainable use) and more to do with ensuring the profitability of economies and companies selling to and sourcing from global markets is the first step towards rejecting this rationale. It is in the ability of certain actors to use their power to exploit both real and perceived water scarcity concerns that the danger of water grabbing exists.

3. Who Are the Water Grabbers?

Many different actors, both old and new, are involved in the global water grab. These include specialized water-targeted investment funds, transnational water companies, and the whole array of actors whose activities depend on the trade in 'virtual water'.

One of the most striking developments in recent years has been the creation of private investment funds in which water features as a significant component of the investment portfolio. In 2008 Rabo Farm Europe Fund, a private equity fund of the Dutch Robobank, and the Swiss Sarasin Bank set up the 'AgriSar Fund'. It includes investment in water assets as one of its key objectives, stating that "The monetization of water is just beginning as a previously free asset gains scarcity value and we see opportunities for companies able to secure and manage supply".¹² It is clear that for private equity funds such as AgriSar the 'global water crisis' represents a lucrative investment opportunity.

A similar trend can be observed within the global water industry as private corporations spent much of the last decade seeking control over former public water services in countries such as Peru, Bangladesh and South Africa. Huge monopolies exist within this global water industry with two French water corporations, Vivendi and Suez, dominating about 70% of the world water service market.¹³ The imposition of a for-profit water service model based on the 'ability to pay' and geared towards greater levels of water consumption does not bode well for pro-poor outcomes nor for water conservation. However, it has also faced considerable resistance, with many communities successfully stopping privatization.¹⁴ A growing number of cities are now 'remunicipalizing' their water.¹⁵

Meanwhile agribusinesses are exercising increasing control over water resources as they shift towards greater vertical integration. This control is often used to increase water-intensive agriculture which competes with and sometimes displaces more sustainable and locally adapted forms of farming.

Given the water resources that are required to produce agricultural products, global agricultural trade is at a very basic level, about "...a gigantic transfer of water, in the form of "commodities," from regions in which it is abundant and low-cost to others in which it is scarce and expensive".¹⁶

This trade in 'virtual water', which is not unique to agriculture but encompasses the water used to produce and trade in all manner of goods and services, significantly opens up the debate as to who the water grabbers are. In particular, it requires an understanding of the complex linkages between meeting water demand in one regions and the creation of water pressure and scarcity in another. One example is the EU "Everything But Arms" trade policy, which has been shown to be encouraging expansion of large-scale water-intensive sugarcane production in Cambodia that is then exported to Europe.¹⁷

4. How Is Water Grabbing Related to Land Grabbing?

The causes of water grabbing are similar to those of 'land grabbing': the phenomenon whereby investors acquire or lease vast tracts of land, with negative socio-economic and environmental effects. An investor's control of land usually comes with a corresponding control of water resources. Indeed, access to water could be the most valuable part of the deal. This is especially so given that host governments seek to entice investors by offering them concessions with regards to water use. In Mali and Sudan, for example, investors have been granted unrestricted access to as much water as they need.¹⁸ Some international investors trade a promise to build water infrastructure for the acquisition or lease of land. The Libyan government for instance built an irrigation canal in exchange for 100,000 hectares of land in Mali.¹⁹

Acquiring land in order to access and control water is especially relevant to countries facing water scarcity. Renewable water resources in the Gulf states for example are set to run out in the next three decades.²⁰ The implications of this water scarcity are profound. Saudi Arabia, once a net exporter of wheat, intends to phase out domestic production of wheat by 2016 due to the depletion of fresh water reserves in the country.²¹ It seeks to compensate for this loss in domestic food production by acquiring farmland abroad, thereby transferring much of the pressure on water resources caused by agricultural production to other countries. This is a strategy likely to be pursued by other water deficit countries as they seek to 'lock in' access to water reserves and resolve their own water constraints by acquiring land abroad.

Land and water grabbing are also related in that both involve a model of water use characterized by exploitation, exclusion, and profiteering. Land and water grabbing are driven by large-scale monocultural production of both food and non-food crops. Premised on the application of industrial production practices, these monocultures gear agriculture towards profit maximization in which water is seen simply as a raw material to be converted into higher value commodities. The fact that monocultures are highly water intensive, using up to ten times more water than biodiverse agricultural systems, is thus rendered unproblematic as long as a series of biophysical constraints can be overcome externally, even if this means land and water grabbing.

Increasingly monocultures are being challenged for their own false claims that they represent the most efficient (and therefore most resource-conserving) way to organize agricultural production. While sugarcane production continues to expand rapidly in Brazil, for example, this has been accompanied in recent years by a decline in productivity suggesting that the increase in sugarcane production levels comes from the expansion of the area under monocultures.²² The continued profitability of sugarcane production in Brazil thus depends upon ever greater land and water grabbing.

5. What Is the Impact of Water Grabbing on Local Livelihoods, Food Security and Aquatic Landscapes?

The claim outside investors make to local water resources is often justified in the name of development. The argument is that sufficient water resources for ensuring the successful operation of commercial projects will help generate employment, boost agricultural productivity, contribute to the creation of new infrastructure, and open up additional revenue streams for the government. If these projects were managed in a sustainable fashion with proper consultation of affected communities, then some of these benefits may indeed be realized. In many instances however these development promises are contradicted by the reality on the ground.

With respect to livelihoods, one of the main problems is the inability or unwillingness of investors and governments to register how land and water is being used prior to being leased or taken over. Instead, the land and water resources targeted in commercial deals are often described as being unused, in order to make the transfer into the hands of the investor entirely unproblematic. This is however to miss the value of the land and water to the lives of rural communities, who depend on these resources not just for sustaining their livelihoods but also their social and cultural identity. Commercial investment deals which only price land and water in economic terms are likely to miss these aspects. Rural communities, which often practice small-scale agriculture, simply cannot compete for the government's attention when others are offering high capital investments. The consequence is that they invariably are pushed aside in favor of larger-scale commercial ventures.

Mismanagement of water resources by private companies can also end up having catastrophic effects far beyond the companies' immediate physical operations. When water management fails and water resources are polluted, the entire water flow through a river system can be affected. Leakage of toxic effluent produced on oil palm plantations in Indonesia is, for instance, killing river fish and other aquatic wildlife in addition to making the river unsafe for drinking.²³ Plantations are also affecting natural drainage patterns in a profound way, leading to both depletion of water in nearby rivers as well as increased flooding during the rainy season.²⁴ Similarly, sugarcane plantations in Brazil, located right by rivers and lake sides, have led to habitat and species loss caused by deforestation and the use of toxic sludge (a by-product of ethanol processing) as fertilizer, which has polluted rivers and underground water tables.²⁵

6. Who Benefits from Investment in Water Infrastructure?

Water grabbing is not limited to the direct extraction of water for the production of food, fuel and flex crops. It also involves various form of water infrastructure such as dams, reservoirs, hydropower stations, canals, and irrigation systems which

divert and deplete water sources, potentially affecting entire river basins. Governments often view these capital-intensive projects as vital to further economic development. The key question however is economic development for whom? The Brazilian government, for example, is investing heavily in the construction of hydroelectric power stations on the grounds that hydropower is a renewable, highly efficient, and, once the infrastructure is complete, a cheap source of energy. Yet it has also been accompanied by the privatization of energy provision, which has placed hydro-electricity at the service of large transnational companies such as mining, metallurgy and supermarket conglomerates that receive energy at rates as much as ten times lower than those paid by the general population.²⁶ As a result, ordinary Brazilians have experienced rate hikes of over 400% in the last ten years, even though 80% of Brazil's energy is generated through hydropower.²⁷

While hydropower has courted controversy, investment in irrigations systems is sometimes viewed as more benign given that they are critical to food production and can therefore potentially increase food security. As a result, many states have welcomed foreign investment in irrigation systems to modernize agriculture and increase yields. However, while it is true that yields on irrigated croplands are on average two to three times higher than those on rainfed lands, this does not automatically translate into greater food security. Irrigation is rarely introduced in and by itself, but rather forms part of a technology package including fertilizers, pesticides, and sometimes a switch to mechanization. While this technology package may be initially subsidized by governments or other third parties, allowing all farmers to participate in technological change, over time these subsidies are often withdrawn, leaving farmers to cover the higher input costs themselves. This may force out the less able or poorer farming households. Looking more closely at how the benefits of irrigation schemes are distributed and how they restructure land-based social relations thus provides us with a more cautious reading of foreign investment in water infrastructure.

7. What Is the Relationship between 'Water Grabbing' and the Privatization of Water Resources?

The privatization and commodification of water resources are key mechanisms through which water grabbing is effected. Water privatization is not a new phenomenon, but the new round of water grabbing has certainly brought water into sharper focus as a commercial asset.

Privatization and the trade in water rights it facilitates can lead to indigenous water rights being expropriated or auctioned off to the highest bidder. This danger exists especially where water rights of indigenous communities go unregistered, because they are subject to customary and collective forms of management rather than

formalized state controls. For example, the Mozambican Water Law theoretically gives priority to water use by rural households for their domestic needs, livestock, and small-scale crop irrigation.²⁸ Yet at the same time, it doesn't require this "common use" to be registered which makes it vulnerable to competition from other users as it is essentially rendered 'invisible' to government planners.

The allocation of private water rights to investors is by contrast highly visible. As such, water privatization can be a way of transferring power to private investors from local communities and a first step towards the erosion of customary and collective forms of water management.

Destroying the social organization of water resources and replacing it with a private, individualized form of market-based water management is one of the main goals of neoliberal water policy. Neoliberal water policy presents this as a progressive development for it allocates water to its most efficient and productive users and helps secure water rights. The problem with this argument is that it ignores the major power disparities between actors in the water market. The assumptions of neoliberal water policy only hold when all water actors are free and equal in the market place. This is of course a fallacy. The new enclosures of water resources enabled by water privatization should thus be roundly resisted.

8. How Are Competing Claims to Water Access and Usage Currently Dealt With?

A key issue which is raised by water grabbing is how competing claims to water access and usage should be mediated. This is a legal, political and, ultimately a moral question. From a legal perspective, there are a complex array of national and international laws governing water allocation. One of the problems with the current wave of water grabbing is that investors are targeting countries where national legislation on water rights is either non-existent, vaguely defined, or weakly enforced. Without adequate regulation and enforcement, the danger is that power will simply determine outcomes. Given that the bargaining power of local communities is nearly always less than that of the foreign investor, who also often enjoys governmental support, it is they that have the most to lose.

9. How Can Transboundary Water Resources Be Equitably and Sustainably Managed?

River systems do not respect international boundaries. Water grabbing and the extraction, diversion or pollution of water resources in one region or country can therefore impact upon the availability and quality of water in another region or

country. Transboundary water management of a river basin system is therefore essential. Integrated water resource management (IWRM) has been advanced in this context as "a process which promotes the coordinated development and management of water, land, and related resources in order to maximize the resultant economic and social welfare in an equitable manner without compromising the sustainability of vital ecosystems".²⁹ The success of IWRM relies heavily on the ability of different states involved to collaborate closely in order to arrive at agreements on shared rights and responsibilities. Water grabbing can however jeopardize this spirit of collaboration.

The already complicated hydropolitics of the Nile river basin has, for example, been rendered significantly more difficult by the increase of foreign investment in the region. New actors such as China, India and the Gulf states are investing in large-scale plantations, irrigation, water and hydro-electric infrastructure throughout the Nile basin. China has financed eight dams along the Nile including two in Egypt, two in Ethiopia, one in Uganda, one in Burundi and one in the Democratic Republic of Congo.³⁰ Investors have also targeted Ethiopia's Gambella region where one million hectares have been leased to 896 companies since 2009.³¹ The Ethiopian government's granting of free access to water resources has been one of the key pull factors. This unrestricted access to water has led to cavalier attitudes by investors towards water conservation and management by companies such as Karuturi, one of the world's top 25 agribusinesses which operates vast palm oil, sugar cane, rice and cereal plantations in the region.

The cumulative impact of this increased water use on rivers within the Blue Nile water shed is as yet unknown. What is clear however is that outside investors engaged in water grabbing with the consent and encouragement of host governments are changing the geopolitics of the region, challenging the historical hydro-hegemony of Egypt. This could be a positive development if it leads to a shared vision for water management and an enabling environment for joint investment projects by all countries bordering the Nile (with some signs of this in new Nile Basin Initiative). If however it leads to growing unilateral measures by many of the Nile basin countries and greater extraction by foreign investors, it will have grave social and ecological consequences. Since all river basins are affected to a lesser or greater degree by similar demographic, economic, climate and land-use changes, the success of IWRM depends first and foremost on agreement on a shared set of values. If the integrity of these values is undermined by a zero-sum, competitive model of resource extraction and use, then the governance of river basins is made extremely difficult.

IWRM proposes the concept of 'total economic value' as a way to integrate into cost-benefit analyses the economic value of the many ecosystem services river basins perform. This framework is intended to serve as a corrective to the history of perverse subsidies and incentives which have often been granted to environmentally degrading commercial and industrial resource exploitation. An example of

this can be seen in Ulaanbaatar, Mongolia where political authorities, faced with a looming water scarcity, are seeking to tap into additional groundwater reserves and expand surface water storage within the Upper Tuul watershed. Total economic value assessments have shown that continued degradation of the Upper Tuul will cost the Mongolian economy around \$270 million over the next 10 years; while conservation of the watershed ecosystem generates a return of \$15 a year for every \$1 invested.³² IWRM thus demonstrates the imperative of conservation, something which is still currently lacking in the Mekong river basin where 'conflict, rivalry and inaction' obstruct locally based sustainable water management.³³

10. What Should Countries Which Face Water Scarcity Do?

Water scarcity is a real issue for many arid and water-stressed countries. With climate change, water scarcity in certain ecological zones is set to increase as global warming leads to higher variability in rain-fall and increasing risk of reduced precipitation, falling groundwater tables, and drought.³⁴ All water users must therefore adjust to the projected impact of climate change on future water reserves.

The question remains then what countries facing a water deficit should do to guarantee their water security.

There exist both supply and demand side options. On the supply side, states can invest in expanding the supply of water resources by improving water storage facilities and turning to non-conventional sources of water such as sea water which can be transformed into fresh water through desalinization techniques. Both of these options are expensive, requiring substantial capital investments and high energy costs and are therefore not available to less wealthy nations or may come with environmental impacts. Demand side options are usually more effective economically, socially and ecologically. Efforts focused on water recycling, conservation and the reduction of water waste and loss can yield substantial gains.

Neoliberal water policy advocates argue that water privatization and market mechanisms are part of the solution. As mentioned earlier, their premise is that the market allocates water to the most efficient and productive user and therefore minimizes waste. They also argue that by treating water as an economic rather than a public good, water is priced according to its true scarcity cost which encourages its more sparing and sustainable use. Scarcity is thus presented as an opportunity to move towards the creation of private water markets.

It is highly questionable however to what extent private water markets are the best mechanism to balance between equity and efficiency of water use. Incentives should certainly be designed to encourage users to conserve water. This does not have to correspond to the creation of private water markets though, which can threaten poor people's right to water by linking access to water to the ability to pay. Instead,

governments should end perverse subsidies which are given to water-intensive, water-wasting industries, luxury projects such as golf courses and hotels, and to investors seeking to profit from land and water rights given to them as 'freebies' by host governments. The global water crisis is in large part the consequence of the current trajectory of development which undervalues natural capital and fails to integrate issues of sustainability, transferring a huge ecological debt to future generations. This needs to radically change if the true causes of water scarcity are to be addressed.

11. What Can Be Done to Protect the Human Right to Water?

Rather than accepting the false solutions advanced by neoliberal water policy, a rights-based as opposed to market-based approach stresses the fundamental obligation of all states to respect, protect and fulfil the human right to water. Thanks to a groundbreaking resolution adopted by the UN Human Rights Council on the 30 September 2010 and in July 2010 by the UN General Assembly, this Right to Water is not just a moral duty but a legally binding and enforceable human right.³⁵ It also includes the extra-territorial obligation of states to ensure that their own citizens and third parties such as private companies do not violate the Right to Water in other countries with respect to the availability, accessibility and quality of water.

The recognition of the Right to Water should form the basis for regulating land and water deals. Of utmost urgency is the need to register all water users and forms of water management. While neoliberal water policies seek to destroy the 'plurality of water rights, water identities and management modes' in order to replace them with a uniform market logic, a rights-based approach must make these rights, identities and modes visible as the first step towards countering water grabbing.³⁶

There are a number of measures states can take to protect the Right to Water. Any negotiation of water rights in a land deal needs to be open to scrutiny and should involve the proper consultation of affected communities, defined as expansively as possible based on environmental and social impact assessments. States should always prioritize the water requirements of local water users over those of outside investors.

A critical distinction should be made between water as a vital resource and public good (associated with the satisfaction of basic needs), which is non-negotiable and should be absolutely guaranteed; and water as an input for production upon which legitimate controls and restrictions may be placed. One cannot permit, for example, the allocation of water rights to agribusinesses where they affect the water requirements of small-scale farmers engaged in subsistence agriculture or (precarious) production of food for sale in local markets. States can strengthen the hand of these small-scale farmers by recognizing customary forms of water management; allowing traditional water users to form collective water user associations and apply for water permits. Where people feel that their Right to Water is either denied or

violated, they should have the possibility to claim their right and seek compensation before a court of law. The Right to Water is ultimately a governance issue which needs to be regulated by states.

12. How Is ‘Water Grabbing’ Discussed in International Fora and What Could Civil Society Propose?

Conservative fora such as the World Water Council and the Global Water Partnership, which maintain strong ties with the major water corporations, have largely promoted a pro-water privatization agenda. The creation of private water markets and the allocation and trading in water rights are seen by these actors as rational responses to the growing scarcity of world water supplies. This strategy is also supported by multilateral institutions such as the World Bank, the International Monetary Fund, and the various regional development banks where development aid is sometimes linked to the privatization of water resources.

The charter of the Marseille Alternative Water Forum in 2012, however, rightly states that “Water should be recognized as a common good for all of Humanity. Water is vital for all life and is not a commodity”.³⁷ Water should thus be managed by public services and democratically distributed among different users. This indeed reflects the reality of water provision: over 90% of water is delivered by the public sector.³⁸ Given the expertise of the public sector in water service delivery, public-public partnerships and mechanisms such as the Water Operator Partnership initiative and the UN Global Water Operator Partnerships Alliance, which support this public sector knowledge exchange, hold much promise in expanding access to water.³⁹

Water grabbing, within the context of land grabbing, is an item which has only recently made headlines and is an area where much research still needs to be done. Forums such as the Marseille Alternative Water Forum can aid in this effort by drawing attention to this issue, highlighting the evidence which suggests that water is a key driver of international land deals. The dangers of this form of investment, which risks violating people’s right to water, needs to be underscored. Given that many instances of water grabbing involve the extraction of water for large-scale, industrial agriculture, it will be important for civil society to draw attention to alternative agricultural practices which help promote sustainable water use. These can include practices such as water harvesting, micro-irrigation technologies, mulching, and the construction of hill-side terraces lined with grass shrubs and trees which enhance the ability of the soil to catch and store water. Most of all, inspiration should be taken from the daily water use practices of many peasant communities, such as those in Catacaos and Oromia mentioned in this primer, whose water management systems are based on an intuitive understanding of the ecological balance that must be struck between humans and nature.

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THE REAL PRICE OF EUROPE GOING GREEN

SILAS KPANAN'AYOUNG SIAKOR*

Silas Kpanan'ayoung Siakor, Liberian, is a social justice and community rights campaigner. He works for the Sustainable Development Institute and focuses on community rights in the natural resource sector especially on forestry, land and agriculture expansion. In 2002, he was awarded the Whitley Awards for Environment and Human Rights (www.whitleyaward.org), in 2006 the Goldman Environmental Prize for outstanding environmental achievements in Africa (<http://www.goldmanprize.org>), and in 2012 the Award for Outstanding Environmental and Human Rights Activism (<http://www.alexandersorosfoundation.org>).

Introduction

As Europe, the US and the emerging economies of Brazil, Russia, India, China and South Africa (BRICS) continue to promote development models that rely on economic growth, which is often driven by over-consumption, questions are now being raised about how much longer the human society can continue on this path. Understandably, these concerns are driving innovations for example in the energy sector. But, while politicians and big businesses promote renewable energy technologies as a breakthrough that should be harnessed, the social and environmental costs associated with the raw materials they feed on [have] cast doubts about

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their “sustainability.” The “green” credentials of some renewable energy technologies are under fire as evidence of environmental degradation and human rights abuses, associated with the raw materials that fuel them, continue to multiply.

There is evidence that with increasing tension and competition for natural resources, the poor and marginalized will be pushed further into poverty. To expect a more equal, just and peaceful world in this context would be an illusion as wealthy nations fight to keep their places at the top of the economic ladder. This paper, drawn on experiences from Liberia, highlights the environmental and human costs renewable energy supplies in Europe pose to the poor in southern countries.

Behind the Renewable Energy Myth

Crude palm oil and biomass are two raw materials some renewable energy technologies rely on. To produce these two commodities in large quantities, multinational corporations secure agricultural lands to establish large-scale plantations. Studies show that rising demand for these biofuels is driving land grabs, displacement and increasing poverty in Africa. The World Bank estimates that of the 56 million hectares of farmland leased in 2009 alone, more than 70% of the demand was for land in Africa.¹ That most of the land was leased in countries with weak governance, and where the extraction of natural resources [is] linked to poverty and human rights abuses, should be of concern. The Commission on Legal Empowerment of the Poor warns that in countries with weak governance “the plight of the poor is often rooted in political systems in which citizens are denied a voice; government institutions have no obligation to answer to the people, and special interests exploit resources without fear of scrutiny.”²

In the context of European countries including Sweden and Germany, the Liberian experience is particularly relevant. The biomass producer Buchanan Renewables entered into an agreement with the Government of Liberia to build and power an electricity plant using wood chips from unproductive rubber trees.³ The company’s claim that unproductive rubber trees would be the primary raw material needed was a major selling point of the agreement. But, more than four years after the signing of this agreement, only the billboards proudly claiming “Lighting Up Liberia” have materialized.

Instead of delivering the project, Buchanan Renewables entered into an agreement with the Swedish energy giant Vattenfall to supply wood chips to their plants in Europe. On June 16, 2010 Vattenfall announced that together with Swedfund they had acquired a 30% share in Buchanan Renewables.⁴ The justification was standard; “using biomass is an important key to reducing Vattenfall’s emission of fossil carbon dioxide.”⁵ The company went on to explain that the move would help them transition from burning coal to burning wood and that given limited supply

of biomass in Europe the move was necessary to meet the increasing demands. Unbeknown to their customers[,] who would proudly claim that their energy supply is from renewable sources, were the human rights abuses and environmental pollution linked to the “unproductive rubber trees” they would be paying for indirectly. Firestone Liberia, the largest supplier of rubber trees to Buchanan Renewables, was one of several plantation companies named in a United Nations and Government of Liberia report for appalling human rights abuses on their plantations.⁶ This situation is however not unique to Firestone.

The Potential New Suppliers

Sime Darby Plantation Liberia (SDPL) and Golden Veroleum Liberia (GVL) both acquired large quantities of lands in Liberia to grow oil palm and rubber. The Government of Liberia awarded 311,187 hectares of land to SDPL in 2009 and in 2010 awarded another 350,000 hectares to GVL. The crude palm oil both companies produce is a major ingredient for biofuel, which is also promoted as renewable energy. Both companies are members of the Round Table on Sustainable Palm Oil (RSPO), the international body that certifies crude palm oil as sustainable.⁷ As members of the scheme[,] both companies claim that their crude palm oil is produced in an environmentally friendly and socially responsible manner.

But, the realities are far from this picture. First, all the land allocated to them were taken from the customary owners without due process. They were neither consulted nor did they give consent for their land to be allocated. Both companies have been at the centre of controversies since they started operations. At the start of its operations in Liberia SDPL destroyed farms and planted palm on farmlands that provide livelihoods and food for the local communities, leaving very few alternative livelihood options available to those not incorporated into the company workforce. As a result, in 2011 communities in Garwula, Grand Cape Mount County filed a complaint with the RSPO claiming that SDPL was violating their rights, including polluting their water sources and taking their land for which they had not consented. The company had also cleared forests used for various cultural practices to plant oil palm.⁸ In October 2012 a separate complaint was filed to the RSPO against GVL because the company had allegedly failed to follow RSPO procedures[,] including failure to secure consent from land owners before clearance.⁹ In addition to the issues raised in these complaints, the contracts negotiated with the government of Liberia have also come under criticism. The terms of both agreements allow the companies to take community lands and to displace or resettle communities without compensation or due process.¹⁰ In spite of these problematic terms of their agreements[,] both companies have forged ahead with implementation of those contracts.

Conclusions

As communities suffered the social and environmental impacts of Firestone Liberia plantations[,], their unproductive rubber trees sold well to Buchanan Renewables, who then resold them as wood chips to Vattenfall. The electricity or heating generated from their use then branded as renewable and sustainable energy was sold to European consumers. While politicians and big businesses promote renewable energy technologies as a breakthrough that should be harnessed, the social and environmental costs associated with the raw materials they need is often ignored. It is therefore understandable that environmentalists and human rights defenders question the “green” credentials of renewable energy technologies.

Additionally, the crude palm oil that SDPL and GVL will produce in the coming years will be branded as environmentally friendly and socially responsible commodities to European consumers. While it may be true that the technology used to turn the crude palm oil into biofuel relies on renewable raw material, the manner in which these raw materials are produced should raise some ethical questions for the European consumer. European consumers cannot feign lack of awareness on these issues[,], because [the authors of] various studies have [expressed alarm] at the trend in large scale land deals—especially in Africa. For example, the World Bank reported that approximately 56 million hectares of farmland, with more than 70% in Africa, was leased in 2009 alone. Most of the countries that leased land have weak governance . . . where the extraction of natural resources is strongly linked to poverty, human rights abuses, and environmental degradation. To therefore present energy produced from raw material accessed in this context as sustainable is misleading. . . .

NOTES

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COAL, IDENTITY, AND THE GENDERING OF ENVIRONMENTAL JUSTICE ACTIVISM IN CENTRAL APPALACHIA

SHANNON ELIZABETH BELL AND YVONNE A. BRAUN*

Environmental justice (EJ) movements are distinct from mainstream environmental movements in their attention to social justice. Instead of focusing on the preservation of nature in itself, EJ movements seek social justice for people who live, work, play, and learn in the most polluted environments in the world (Cole and Foster 2001). Numerous scholars have found that while women as a whole have lower rates of participation than men in the mainstream environmental movement (Brown and Ferguson 1995; Mohai 1992), women “are heavily represented in both the leadership and the membership” of environmental justice organizations (EJOs), representing up to 70 percent of the activists in local and state organizations (Brown and Ferguson 1995, 148–50; Kaplan 1997; Naples 1998). Little research, however, has focused on why such sex segregation exists within these movements.

In this study, we examine the ways that activism in EJ movements is gendered, with a focus on how men’s and women’s identities both shape and constrain their activism. Using the EJ movement in the Central Appalachian coalfields as a case study, we reveal how women draw from their shared identities as “mothers”—to

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their children, their families, and their communities—and as “Appalachians” to justify their activism. These women’s personal identities correspond with the collective identity of EJOs in the region, which place children’s health and protection from irresponsible coal-mining practices at the center of their platform for action. This process of identity correspondence may be more difficult for Central Appalachian men, however, because many view coal mining as a part of their history and identity (Bell 2009; Bell and York 2010), despite the fact that the industry now provides far fewer jobs in the region than it once did (Bell and York 2010; Burns 2007). We explore the ways that women and men differentially experience this entangled relationship with coal—as both polluter and source of pride and identity—and how these gendered relationships shape EJ movement participation in the coalfield region. Our findings suggest that an examination of the influence of hegemonic masculinity in the region, and the coal industry’s role in maintaining the gender order, may be central to understanding why EJ activism is so sex segregated.

Literature Review

Identity Correspondence and Social Movement Participation

Over the past two decades, much of the social movements literature has pointed to the centrality of identity in shaping individual participation in movement activities (Friedman and McAdam 1992; Polletta and Jasper 2001; Stryker, Owens, and White 2000). It is now widely accepted that before an individual becomes an active participant in a social movement, her or his personal identity must correspond with the movement’s collective identity (Snow and McAdam 2000).¹ People decide to participate in a social movement “because doing so accords with who they are” (Polletta and Jasper 2001, 284). In their 2000 essay, Snow and McAdam theorize the process whereby movement adherents experience this “identity correspondence” between their personal identities and the movement’s collective identity. They argue that there are two main ways this occurs: through “identity convergence” and “identity construction.” In identity convergence, an individual’s personal identity is already aligned with a movement’s collective identity such that the movement “provides an avenue for the individual to act in accordance with his or her personal identity” (2000, 47). However, there are many social movement participants whose personal identities have not always been compatible with the collective identity of a movement. Before becoming participants, these individuals undergo a process of alignment whereby their personal identities change in some way to make social movement participation congruent with their self-conception.

If one set of personal identities is common to many women and a different set of personal identities is common to many men, then it is possible that the mechanism

of difference between women's and men's varying rates of EJ activism may be tied to what it takes to attain "identity correspondence" between those identities and the collective identity of the EJ movement. Specifically, we argue that the shared "motherhood" identity may more readily correspond with the collective identity of EJ movements than the shared identity of "true manhood" does for men.

The Motherhood Identity and Women's Activism

EJ scholars have found that women's motivations and justifications for their activism are often closely tied to their identities as mothers. In their study of the EJ movement that emerged as a result of the Three Mile Island nuclear disaster, Culley and Angelique (2003, 454) found that "motherhood as an identity and catalyst for action outweighed any ways in which gender was perceived as a barrier" to activism in the movement. Similarly, Krauss's (1993, 247) study of the discourse of white working-class, African American, and Native American EJ activists reveals that across these different groups, women activists' roles as mothers served "as a resource for their resistance." Women activists often refer to the motherhood identity as a motivation and legitimation for EJ activism, as Brown and Ferguson (1995) found of women toxic waste activists in the United States and Braun (2008) found in her study of a woman activist in southern Africa who is fighting for the rights of her community in the wake of a World Bank dam project. The importance of this motherhood identity to EJ activism is also recognized by Peebles and DeLuca (2006), who argue that the "rhetoric of environmental justice" transforms the conceptualization of motherhood to include participating in activities outside the home that may appear contrary to traditional notions of what constitutes mothering behavior.

Women's grassroots EJ activism is not only a contemporary occurrence. As historian Adam Rome (2006, 442) reveals, in the late 1800s and early 1900s, middle-class and upper-class women initiated and led most environmental campaigns in the United States, especially those aimed at reducing pollution and improving the urban environment. Their activism was culturally expected as an "extension of traditionally feminine responsibilities." This was so widely accepted, in fact, that women's roles as caretakers of the environment became an often-cited argument for women's suffrage. Because "men could not be trusted to care for the environment," movement leaders argued, it was necessary for women to have the vote so they could fulfill their responsibilities as "municipal housekeepers" (Rome 2006, 444).

The motherhood identity is not only tied to women's EJ work, however; it is also a common theme in other realms of women's community activism. Nancy Naples (1992, 1998) uses the term *activist mothering* to describe the activities and "motherwork" of African American and Latina women community workers. Activist

mothering encompasses an understanding of mothering practices that reaches beyond a woman's caring for her biological or legal children to include fighting "against the debilitating and demoralizing effects of oppression" in her community (Naples 1992, 457). Similarly, Patricia Hill Collins (1990) reveals the ways that Black women's roles as mothers in their own families extends into their position in the larger community as "other mothers." Using the term *female consciousness*, Kaplan (1997) describes how certain women emphasize their identities as mothers and wives to legitimize the confrontational actions they take to protect their families' access to food, shelter, and a healthy environment. Epstein (1995, 9) argues that women's tendency to describe their activism as stemming from their responsibilities as mothers results from societal pressures that women experience to place their family care-taking role above all else. Framing their activism as originating in their concern for their children confers "moral legitimacy" to women's activism in a way that other justifications—such as concern for their own health or their interest in community work—do not.

Masculinity and Activism

While the motherhood identity has shaped and facilitated women's EJ activism, there is evidence that masculine identities have historically stymied men's activism in grassroots EJ movements. According to historian Adam Rome (2006, 456), men's lack of grassroots environmental activism is rooted in the early 1900s, when a "gendered divide" emerged between grassroots environmental activists and professional environmental reformers. While environmental issues were historically considered the responsibility of women, alliances between men and women in environmental reform coalitions were quite common in the late 1800s. However, this all changed with the shift in gender politics that took place between the late 1890s and early 1910s. During this era a "masculinity crisis" emerged, resulting, in large part, from the demand for women's suffrage, women's push to enter male-dominated professions, and the closing of the frontier (Rome 2006).

Many men attempted to reclaim their masculine identities in the face of these threats to Victorian manhood by demonstrating "macho qualities," such as playing football, boxing, and "war-mongering" (Rome 2006, 448). Male environmental reformers also aggressively sought to quash any possible charges of "effeminacy" by distancing themselves from women activists, both through rhetorical strategies that framed environmental protection using more "masculine" justifications, such as worker productivity and economic benefits, and by explicitly excluding women from environmental and professional organizations (Rome 2006, 450).

The concept of hegemonic masculinity is an important one for understanding the processes that shaped the sex segregation of environmental activism in the decades

around 1900. Hegemonic masculinity is the “pattern of practice” that maintains men’s dominance over women while simultaneously creating a hierarchy of masculinities that subordinates some men to others. As defined by Connell and Messerschmidt (2005, 832), hegemonic masculinity is “the currently most honored way of being a man” that requires “all other men to position themselves in relation to it.” In their revised theorization, Connell and Messerschmidt argue that hegemonic masculinity can vary by local context, and local versions of hegemonic masculinity can differ from each other. Thus, what may define “true manhood” in one social context may not in another. In addition, hegemonic masculinity is not automatically maintained or reproduced. As Connell and Messerschmidt (2005, 844) argue, “‘Masculine domination’ is open to challenge and requires considerable effort to maintain.” Methods of maintenance may include marginalizing or excluding women (Martin 2001) and “policing” other men (Connell and Messerschmidt 2005). When hegemonic masculinity is under threat, as it was during the early 1900s, men may engage in “toxic practices” to “stabilize gender dominance in a particular setting” (Connell and Messerschmidt 2005, 840).

The Case: The Coalfields of Central Appalachia

Masculinity and Coal Employment

As Bell and York (2010) have argued, the hegemonic masculinity of the coalfield region of Central Appalachia has historically been, and continues to be, tied to coal mining and the coal industry more generally. Traditional gender ideology and the gender expectations that accompany this ideology were ensconced in Central Appalachian life during the late 1800s and early 1900s through the coal industry’s exploitation of traditional gender norms in its construction of coal camps. According to Sally Ward Maggard (1994, 30, 18), through intentionally “equating masculinity with a willingness to work in dangerous conditions” and femininity with “domestic labor inside coal camps,” the unpaid work of women subsidized coal production by allowing coal companies to pay coal miners wages that were insufficient to cover the true cost of sustaining workers’ households. Supporting Maggard’s claims, Yarrow (1991, 286) argues that coal mining has been “socially constructed as the epitome of ‘men’s work,’” and Beckwith (2001, 310) contends that the Central Appalachian coal-mining workforce has been so male dominated that it has created “a context in which ‘miner’ and ‘male’ [have] become conflated, a conflation that is so deeply ingrained that it is virtually undetectable.”

This tie between masculinity and coal mining in the region has also traditionally been connected to membership in the United Mine Workers of America. Historically, coal-reliant families held a deeply rooted identity as “Union People”

(Bell 2009). However, in recent decades there has been a tremendous decline in union membership (Burns 2007) because of the growth and dominance of multinational coal companies, which have taken a decidedly antiunion stance in the region (Bell 2009). The decline in union mines has meant that the union identity, which was so central to the coal miner's identity (and the masculine identity), is under attack.

In addition to the decline in the number of union mines in Central Appalachia, there has also been a drastic decline in coal mining employment overall. Since the 1950s, mechanization in the mines and, more recently, the advent of mountaintop removal coal mining have radically reduced the number of mining jobs throughout Central Appalachia, and West Virginia in particular (Burns 2007). In 1948 there were 131,700 coal miners in West Virginia, while in 2006 there were only 20,100 (Bell and York 2010). The decline in mining jobs has created a tremendous upheaval in the region's economy such that service-sector jobs have replaced mining jobs as the leading sources of employment and earnings (Maggard 1994; Miewald and McCann 2004). With this increase in service-sector jobs and the decline in mining employment, many women are now the primary breadwinners, a difficult change for many families (Maggard 1994; Miewald and McCann 2004; Legerski and Cornwall 2010). Miewald and McCann (2004, 1054) argue that while the strict gendered division of labor may have declined in the region, the related gender ideology "is still felt." This disconnect between ideology and economic reality has meant that many men are no longer able to live up to the hegemonic image of masculinity that has historically pervaded the region (Bell and York 2010).

Environmental Injustice and Central Appalachia

As noted previously, one of the causes for the recent decline in mining employment has been a shift to less labor-intensive forms of coal mining, notably mountaintop removal mining. This form of coal extraction has had consequences for Central Appalachia that reach far beyond declining employment opportunities, however. Mountaintop removal coal mining entails blasting apart mountains to expose thin coal seams, which are scraped from the land with enormous draglines. The large quantities of excess rock that this mining method generates are dumped into valleys, covering hundreds of miles of streams in the process (U.S. Environmental Protection Agency 2005). Communities in proximity to mountaintop removal mining and other industry-related activities suffer numerous problems as a result of these coal operations, including flooding (Flood Advisory Technical Taskforce 2002), respiratory disorders from coal dust (Ohio Valley Environmental Coalition 2003), well water contamination (Orem 2006), and technological disasters resulting from breaches or failures in impoundments containing coal waste from coal-cleaning or coal-burning plants (Erikson 1976; Scott et al. 2005). Many

residents argue that they are forced to suffer these environmental injustices because Central Appalachia is serving as an “energy sacrifice zone” for the rest of the nation.

The Central Appalachian coalfield EJ movement began in the early 1990s and was started in large part by white working-class women fighting to protect their families from the toxins, flooding, air pollution, and other dangers associated with the increasing impacts of mountaintop removal coal mining and coal processing.² The EJ movement in Central Appalachia exhibits a makeup typical of established EJ movements; women make up the leadership and bulk of the rank and file in the movement, and there are relatively few local men involved in the struggle. We explore the reasons for this difference in this particular case, drawing specifically on the links between the meanings of gender and activism for women and men in the coalfield region.

Method

Data for this study are drawn from in-depth interviews and participant observation. From 2006 to 2008, the first author conducted 28 in-depth, audio-recorded interviews with a purposive sample of EJ activists in Central Appalachia. Using a list of activists involved in the “Friends of the Mountains” network, potential respondents were selected through a purposive sampling technique to ensure representation from a number of different towns and counties of residence, a range of ages, and both women and men respondents. Men activists were oversampled to ensure an adequate number of male respondents for analysis. This sample includes both coalfield residents (individuals who have spent at least half of their lives and/or the majority of their childhood in the coalfield region and who have a family history of employment in the coal industry) and noncoalfield residents (individuals who are a part of the EJ movement but have not spent many—or any—years living in the coalfields). We make this distinction because there are a number of people from outside the coalfields, and even outside Appalachia, who have joined the EJ movement. However, the experience of local coalfield activists is unique: They have had to fight a conflicted identity as residents who have been ravaged by the industry that has likely put food on their tables at some point in their lives. For the purposes of this article, we concentrate on the activists who are coalfield residents. This subsample represents 20 activists—12 women, and 8 men. As indicated in Table 29.1, the median age for the activists in our sample is 52 years for women and 53 years for men. All of our respondents are white. Of the women in our sample, 83 percent are working class (based on type of employment and educational attainment), while 50 percent of the men are working class.

Each interview was audio-recorded and ranged in length from 45 minutes to four hours. During the consent process, each participant was asked if she or he would

like to be assigned a pseudonym for the study; however, all of the interviewees declined this option, choosing to have their real names used in any publications or presentations generated from the research. The interview protocol was open ended in format, focusing on activists' narratives of entry into the EJ movement, the challenges they have faced in their protest activities, and what sustains and motivates their continued involvement.

The first author also conducted participant observation with two different EJOs in southern West Virginia during the summers of 2006 and 2007. Participant observation activities included attending various events, such as protests, permit hearings for mountaintop removal mines, media tours, press conferences, and picnics, as well as volunteering in the office of one of the EJOs and living in two different coalfield communities.

Data analysis was undertaken in an inductive manner, first reading through the interview transcripts and field notes line by line to develop a list of themes and a detailed coding scheme. The coding scheme was then applied to the data to examine thematic patterns across and within gender categories.

Gender Identity and Activism

Our analysis reveals that the women activists in our sample most often reference their shared identities as "mothers" and "Appalachians" as the driving force behind their activist work. These identities aid women in their struggles against the coal industry, functioning as "resources of resistance" (Krauss 1993). In drawing on their shared identities as mothers and Appalachians, women coalfield activists justify their protest activities as an extension of their mother work and are thus able to attain what Snow and McAdam (2000) term "identity correspondence" between their personal identities and the collective identity of the EJ movement.

Our data also suggest that identity correspondence may be more difficult for coalfield men to achieve because of the local hegemonic masculinity of the region and its influence on men's personal identities. Corroborating prior studies that link employment in the coal industry to coalfield men's masculinity, the activists in our sample argue that the "coal-mining identity" that many men in the region hold is a barrier to men's activism against the coal industry. We find that the few men who *are* involved in EJ activism have experienced life events or circumstances that have affected their personal identities such that the local hegemonic masculinity of the coalfields is much less salient to their self-conception. These transformations may be responsible for the occurrence of identity correspondence among these men, linking their personal identities with the collective identity of the coalfield EJ movement, thus facilitating their EJ activism.

TABLE 29.1 Characteristics of activists

	Women Activists (n=12)	Men Activists (n=8)
Median age (years, in 2007)	52	53
Age range	38–77	26–71
Race (% white)	100	100
Class		
—% working class	83	50
—% professional class	17	50
Percentage of activists who lived outside of the coalfields for five or more years of their life	33	75
Percentage of activists who never worked for coal industry or whose partners never worked for coal industry	25	50

Source: Table created by authors

Mothers and Appalachians: Identities and Women’s Activism

Both women and men activists in our sample recognize the disproportionate number of women at the front lines of the fight for coalfield justice in Central Appalachia. As Bill Price asserts, “I definitely see that there are more women on the radical environmentalist side than men.” When asked whether he believes more women than men are involved in speaking out against the coal industry, Nick Regalado states, “Definitely. Absolutely. Absolutely. I would 150 percent agree with that . . . the women are a lot more vocal than the men, and that is a real dynamic.” Confirming Bill’s and Nick’s sentiments, Ed Wiley asserts, “There’s been more women [to] stand up with fire in their eyes and more backbone than what these men got around here, that’s for sure. . . . There are more women involved [in the movement].”

The most prevalent theme, and most deeply expressed conviction, among women activists in our sample is that their activism is an extension of their identity—and obligation—as mothers. One example of this pattern is West Virginia activist Maria Gunnoe, whose narrative of entry into the EJ movement reflects her motivations for action as stemming from her role as a mother and her anger at that role being compromised. Maria’s home was severely flooded on her daughter’s birthday in June 2003 because of a mountaintop removal coal mine behind her house. Five acres of her land washed away that night, and the raging water nearly took her house as well. As Maria relates, “It was a night that I will never forget. If I live to be a hundred years old, I’ll never forget that. . . . I literally thought we were gonna die in this house.” The psychological trauma the flood caused her children served as Maria’s “call to arms” for action:

There is tremendous fear when it rains . . . my daughter went through a, hey, I feel safe in calling it a posttraumatic stress disorder. She would set up at night—if it was raining or thundering, or any weather alerts or anything like that going on on the news, my daughter would not sleep. And I, I didn't notice this to begin with . . . I was so overwhelmed with everything going on, that I never even thought, "What's this putting my kids through?" Until one morning . . . I found out one morning at 3:00 in the morning, it was thundering and lightning, and I go in, and I find her sitting on the edge of her bed with her shoes and her coat and her pants [on]. [Pauses, deep breath, voice cracks] And I found out then [pauses] what it was putting my daughter through. [Crying] And that is what pissed me off. How dare they steal that from my child! The security of being able to sleep in her own bed. The coal companies now own that. They now own my child's security in her own bed. [Pauses] And how can they expect me as a mother to look over that? . . . What if I created terror in their children's lives? And that is what it has done to my children. . . . All I wanted to do was to be a mother . . . in order for me to be a mother, and in order for me to keep my children safe, . . . I've had— it's not an option—I've had to stand up and fight for our rights.

Maria's narrative points to more than her anger toward the coal industry; here she also describes feeling that as a mother it was compulsory for her to become involved in EJ activism. Otherwise, she asserts, she would not be able to fulfill her obligation "to keep [her] children safe."

The call to action for these activist women reaches beyond protecting their own children, however. Many also view their duties as mothers and protectors extending to *all* children. This identity of universal mother has been a driving force for many women activists, such as Judy Bonds, who asserts,

Everyone's child has to have clean air, and everyone's child has to have clean water, and I want my great-great grandchildren to be able to live on this earth. Why shouldn't they? Why shouldn't they be able to live on this earth? It's my duty to protect it for them. And that's what I'm doing.

The theme of activism as *duty* is a strong theme throughout the interviews. Women respondents often asked rhetorical questions such as "How can I *not* fight?" or "If I don't fight, who else will?" Their shared identity as mothers serves as both motivation for action and a resource for maintaining their involvement.

The activists in our sample feel strongly that mothers are protectors. As Maria Lambert states,

It's the need to protect, that need inside of most women, and I would say probably 99.9 percent of the women have that need to protect somebody, whether it's a husband, a child, a parent, a neighbor, an animal, whoever.

Lorelei Scarboro echoes this sentiment when she asserts, "The majority of the Appalachian women that I know were born fighting and protecting."

These women's shared identities as mothers and protectors is also linked to their identity as "Appalachians." The Appalachian region is characterized by its small, tight-knit communities and strong regional identity. Many families in this region have lived on their land for eight or more generations and have depended on mountain land for the nutritional sustenance it provides (deer, morels, ramps) and for supplemental income (from the sale of herbs, such as ginseng, bloodroot, black cohosh, and mayapple). Many of the women activists speak of their prideful connection to the land as a motivation for their action, such as Debbie Jarrell, who explains, "We are Appalachian women, and . . . our roots run so deep, you can't distinguish us from the earth we live on. It's just a part of us." Judy Bonds continues this theme when describing her motivations for activism, asserting, "It's my soul . . . it's not just these mountains—it's our culture and our heritage." The women activists' descriptions of their strong ties to the Appalachian land and culture are often coupled with articulations of fear that the Appalachian way of life is under threat. Maria Gunnoe explains the important role that she feels Appalachian women have in protecting the Appalachian culture from extinction,

The Appalachian women are the backbone behind the Appalachian family. And our Appalachian families are being put in danger. And it's our natural instinct to step up to the plate and say, "Excuse me, but you're killing something I love." You know, and we will fight for it. That is our link to who we are. And it's a link to who our children are. And we can't allow it to be destroyed. As mothers of future generations of Appalachian boys and girls, we can't allow them to steal this from our children—it's too precious. And it can't be replaced.

As Maria's strong association between activism and the land illustrates, the women in our sample believe that their duty as protectors of the children in their communities also includes an obligation to defend the Appalachian land, identity, and way of life. They claim responsibility for ensuring that the Appalachian traditions and values are not permitted to perish under the increasing threats of irresponsible mining practices.

A number of interviewees expressed a belief that the reasons for women's leadership in the EJ movement run even deeper than an obligation or duty that women feel. Some, such as Debbie Jarrell, believe that a primordial "mothering instinct" also drives women into EJ activism. Maria Gunnoe also shares this conviction, further explaining,

As a mother, . . . part of seeing to it that your child grows up in a safe environment is seeing to it that the environment is tended to. . . . When you see your kids' water—future

water—being polluted so that you can keep your lights on, it just becomes a no-brainer. All of a sudden, lights aren't that important anymore. . . . I really don't think that it's in a man's instincts to see that. I really believe that it's the mother's instincts that makes you realize how detrimental what's going on is to our children's future.

Maria maintains that the mothering “instinct” provides a heightened state of awareness about the effects of environmental issues on children, an instinct she believes men simply do not have.

Men involved in the EJ movement, such as Bo Webb, also echo the “mothering instinct” justification for women's leadership and involvement in the movement:

For women—I think it's a natural instinct to protect your children . . . you know, you gave birth to that child. And if someone is going to do some harm to your kids, you're gonna rip their face off. And, I think that brings them to the front—to protect their home, protect their family.

According to Bo, women are not simply prone to EJ activism because they are more aware of the impacts of environmental degradation on children's health, but, he claims, the “mothering instinct” elicits a level of proactiveness—even aggression—among women when their children are under threat. The importance of the mothering “instinct” to activists' justifications for women's leadership in the EJ movement is in keeping with much of the literature on women's activism detailed above. Protest activities that mothers undertake on behalf of their children are often viewed apolitically and simply as extensions of a mother's role to protect, clothe, shelter, and feed her children. Framing women's EJ activism as a result of mothering “instincts,” instead of a conscious decision, affords women some level of cultural protection and legitimation for their protest activities.

The Masculine “Culture of Silence”

While women's personal identities are congruous with EJ activism, our data suggest that masculine identities in Central Appalachia may constrain men's ability to participate in EJ activism. When we asked the men in our sample—all of whom are activists—why they believe there are so few men involved in the EJ movement, they referenced the tie between masculinity and the coal industry. As Bill Price states,

I think some of that has to do with culture. . . . Men were the coal miners, so it's a little harder for them to let go of that sense of, you know, this is how I put cornbread on the table.

In this explanation, Bill refers to the loyalty that many men feel toward the coal industry. Bo Webb argues that it is more than loyalty to the industry, however. He perceives that there is also a strong “culture of silence” discouraging men from speaking out against coal.³ He believes that this silence is linked to peer pressure and the fear of losing status within the community; as Bo explains, “They want to be in the old boys’ club. And they don’t want to mess with the status quo.” Men’s intimate ties to the coal industry and the privilege these ties afford them within the community may discourage them from taking a critical position against coal-related injustices, for fear that such a position could bring marginalization and a loss of status. Women, on the other hand, may be less restricted in their challenges to power because their activist challenges are perceived—at least initially—as “less threatening” since they are made by mothers and wives.

Activist Julian Martin confirms this last point, stating that women seem to have “more protection culturally than the men” when it comes to speaking out against the coal industry. He also suggests that to protect their own status, men publicly diminish or minimize the activist activities of the women in their lives. As an example, Julian describes how a man in the coalfields might dismiss his wife’s activism to his male peers by saying something like, “Well, the little old woman is up there raising hell at the Board of Education again. Yeah, she went down there, I couldn’t keep her home.” A man’s joking in this way could simultaneously allow him to distance himself from his wife’s politically contentious actions while also serving to minimize women’s challenges to the social order. According to Julian, “The men are forgiven for what their, what the women do. . . . But the men aren’t forgiven for what the men do.”

Escaping the Hegemonic Masculinity of the Coalfields

Despite the barriers to coalfield men’s EJ activism, there *are* some coalfield men who have joined the EJ movement in Central Appalachia and have become strong leaders in the fight for coalfield justice, as those in our sample demonstrate. How have they been able to overcome the limitations of what Bo views as a “culture of [masculine] silence”? As Table 29.1 reveals, one characteristic shared among many of the men in our sample is having spent a substantial amount of time living outside of the coalfields. Six of the eight men coalfield activists lived outside the coalfield region anywhere from five to 30 years.

Some of these men specifically cited the significance of their experiences living outside the coalfields in their reflections on why they—and not their male neighbors—have chosen to join the fight for coalfield justice:

I left here and I didn’t get caught up in the culture of silence. I had been out in the world . . . seeing that there are other places, and how this would never be allowed to

go on in [those places]. This could not happen anywhere except West Virginia and Kentucky and apparently southwest Virginia. (Bo Webb)

I traveled across the country. . . . I'd been to other places, I'd seen other things. . . . I was raised here and I'm completely a West Virginian—all of my development really happened here in terms of understanding and ways of the world, but I've—I hate to say it that way, but I've got out of the holler, man, I've actually went farther than [the county seat] to see what the world was like beyond that and see how things operate. (Nick Regalado)

Both Bo and Nick suggest that their exposure to other places not dominated by the coal industry allowed them to see the injustice of the coal industry's actions in southern West Virginia in ways that many less travelled coalfield residents cannot or will not acknowledge. Similarly, Julian Martin credits his experience as a Peace Corps volunteer in Nigeria—another highly exploited region—as helping open his eyes to the problems in West Virginia. After spending two years in Nigeria and returning home, Julian states that southern West Virginia's "similarity to a third world nation disturbed me." The experience of seeing his home with new eyes is what prompted him to become involved in fighting for environmental justice.

Interestingly, while six of the eight men activists in our sample spent five or more years living outside the coalfield region of Central Appalachia, only four of the 12 women activists had lived outside the coalfields for this length of time. The fact that such a large proportion of the men activists lived elsewhere, while the women activists did not, further supports the prospect that there is something about the local context of the coalfields that constrains local men's participation in EJ activism. The activist men's broader view of the world—and their place in the world—may have made them more open to recognizing and being willing to speak out against coal-related injustices in the region.

The other major characteristic placing many of the activist men outside the mainstream masculine identity of the coalfields is that half of them (four of eight) have never worked for the coal industry (see Table 29.1). Larry Brown is a pastor and previously worked in construction; Larry Gibson worked for General Motors; Bo Webb owned his own business in the technical field; and Julian Martin was a science teacher (Larry Gibson, Bo Webb, and Julian Martin are all retired). Three of the four men in our sample who *did* work for the coal industry at some point in their lives have not spent their entire careers in that line of work. Having other career identities outside of coal employment may have helped create a self-conception that was not tied to the coal industry. In addition, working in other environments likely allowed these men to be a part of peer groups made up of other men (and women) not associated with the coal industry, thus providing additional perspectives and role models.

Chuck Nelson is the one man among our sample of activist men who spent his entire career working as a coal miner and never lived outside of the coalfields.

However, his loyalty to the coal industry was destroyed in 2000, when Chuck and his wife joined with other community members who were filing complaints against a coal preparation plant that was spewing clouds of coal dust onto their homes. The mine where he worked and the coal preparation plant adjacent to his community were both owned by the union-hostile multinational coal company Massey Energy. Chuck knew it was just a matter of time before he was fired from his Massey mine "because you don't work for Massey and speak out against Massey." He was right: After 30 years of experience and a clean work record in coal, Chuck was forced to quit his job because of a false accusation. He tried to find work at other mines, but he soon realized that he had been black balled from coal employment entirely. This experience of being forced out of the only occupation he had ever known, coupled with what he perceives to be a blatant disregard for his and his community's health, influenced Chuck's entry into the EJ movement. Chuck's personal battles at work and at home made him "see the lack of concern towards citizens and towards communities" that he now feels characterize the actions of the coal companies. As a result, he claims that he was more open to learning about the larger issue of mountaintop removal mining and joining the fight against it when he came into contact with EJO organizers.

Interestingly, while most of the men in our sample do not explicitly draw on a specific identity (such as father or parent) in their descriptions of why they have become involved in the EJ movement, many do describe their motivations for action as being about protecting their communities. For instance, Bill Price describes "a sense of responsibility to the community he grew up in," believing that he has an obligation to use his skills and knowledge to help people suffering from the consequences of irresponsible mining practices. Similarly, Larry Gibson states that his activist work is in direct response to the injustices the coal industry has perpetrated against Appalachians, whom he calls "my people." And Ed Wiley explains his activism in the EJ movement as being a result of the guilt he feels from being complicit in working for the industry (and the very coal mine) that he credits with making his granddaughter sick. As he reflects,

Here I was part of . . . setting up something that could kill my granddaughter and all them little kids and possibly the community. I mean, it was just like a sledgehammer hitting me. . . . That hurt me . . . that was the wake-up call right there.

Thus, while the hegemonic masculinity of the coalfield region may pose a barrier to many men's entry into the EJ movement, those men who are able to escape the influence of the local hegemonic ideals of manhood may come to draw on identities that are closely aligned with the motherhood and protector identities of coalfield women activists.

Conclusions

We began this article with a puzzle: Why are there so few men involved in EJ activism? Drawing on a case study of EJ activists in the coalfields of Central Appalachia, we find that women's and men's differing rates of EJ activism in the Appalachian coalfields may be tied to how readily their gendered identities are able to "correspond" (Snow and McAdam 2000) with the collective identity of the EJ movement. Our findings corroborate previous studies that have found that women often draw on their shared and socially sanctioned identities as mothers to motivate and legitimate their involvement in EJ activism. Through viewing their activism as an extension of their mother work, these women are able to readily attain identity correspondence between their personal identities and the collective identity of the EJ movement.

Alternatively, identity correspondence with the EJ movement may be more difficult for coalfield men because of the pervasive belief that masculinity in this region is connected to employment in the coal industry (Beckwith 2001; Yarrow 1991) and because the decline in coal jobs has meant that the coal-related hegemonic masculine identity is under threat. Thus, for coalfield men, speaking out against the coal industry not only means speaking out against a potential employer; it may also mean a further threat to an already-vulnerable masculine identity.

While there are very few local men involved in the coalfield EJ movement, there are some local men, such as the eight in our sample, who have managed to overcome the gender-specific barriers to activism. Our data suggest that certain life events and circumstances have affected the personal identities of these men in ways that have rendered the local hegemonic masculinity of the coalfields less relevant to their self-conception. It is these transformations that have allowed for the identity correspondence of these particular men's personal identities with the collective identity of the coalfield EJ movement, thus facilitating their EJ activism.

The ways the activist women and men in our study draw on, extend, and challenge aspects of the gender system (Risman 2004) reveal the dynamic nature of gender ideologies and identities as they are constantly negotiated in social settings and interactions. The men in our study demonstrate that local hegemonic masculinities can be contested and overcome. It is not insignificant that some coalfield men have found ways to disassociate themselves from the hegemonic image of masculinity in the region and that they have come to incorporate competing identities into their self-concept. Not only have these changes made identity correspondence with the EJ movement possible for these men, but such shifts may also be contributing some small degree of progress toward transforming the gender system in Central Appalachia. As feminist scholars, we hold hope that the activism of these coalfield women and men will not only build healthier and more just communities but will eventually contribute a greater challenge to gender ideologies and expectations in the region, allowing for greater freedom for both men and women.

NOTES

1. Snow and McAdam (2000, 42) define collective identity as “a shared sense of ‘one-ness’ or ‘we-ness’ among those individuals who compose the collectivity.”

2. Most people living in the Central Appalachian coalfields are white. In fact, Boone County, the top coal-producing county in West Virginia, is 98.5 percent white (U.S. Census Bureau 2000).

3. “Culture of silence” is a concept that Paulo Freire (1970/2000) discusses in *Pedagogy of the Oppressed*. However, it was not clear from the interview whether Bo Webb was intentionally citing Freire.

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INEQUALITY AND ENVIRONMENTAL POLICY

JOSEPH E. STIGLITZ*

Environmental degradation is everyone's problem, but it's especially a problem for the poor, and for obvious reasons. Their position is more precarious, so when things go wrong, whether it's pollution in a neighborhood or rising sea levels swallowing a country, they are less able to respond effectively. In this sense, inequality ought to be a fundamental consideration when fashioning environmental policies. Let me give two examples.

The first is in a global context, focusing on global warming, which has enormous distributional consequences. Pollution originates disproportionately from advanced industrial countries. Though more recently we've been in a race between the United States and China in which China has finally pulled ahead (in aggregate, but not per capita terms), the United States has contributed more than a quarter of the cumulative carbon emissions since 1750. Yet it is the poorest countries making the least contribution to carbon emissions that are going to be the most adversely affected, and the reason is quite obvious.

The most deleterious effects of global warming are felt in the tropics. Of course, even in the far North, there are big environmental costs. But from the point of view of people in the tropics, adverse consequences are overwhelming—for instance, for agriculture and diseases.

*By Joseph E. Stiglitz, University Professor at Columbia University. This is an edited version of Professor Stiglitz's lecture delivered for Resources for the Future's "Resources 2020" event in October 2012. Reprinted with permission.

Some dramatic examples: Bangladesh is likely to suffer widespread flooding as a result of global warming. For some drought-stricken countries in the Sahel of Africa, even their political problems have been vastly exacerbated by climate change-related famine and land shortages. And small island nations risk being completely submerged by rising seas. Wealthy countries may not have intended to do them any harm, but it's hard to think even a war against them would have done more destruction than what we are doing through global warming. Over and over, throughout the world, the theme is clear: Those with the least capacity to respond to environmental crisis are poised to receive the most direct and punishing blows, and these are the countries that have contributed the least to global warming.

Let me give another kind of example from the United States. Here as well, those with fewer means pay the highest price. My colleague Janet Currie has provided compelling evidence that children born to less educated minority mothers are more likely to be exposed to pollution before they're born. She shows that this exposure affects birth weight, with consequences that are life-long and reflected in lifetime earnings. And even more, the effects continue across generations; children of people who have been harmed by environmental pollutants, their children are also of lower birth weight, with lower lifetime prospects.

America has the least equality of opportunity and the least social mobility of the developed countries. Probably the most important of the reasons has to do with lack of equal access to good education. But clearly these environmental impacts are also an important aspect of the intergenerational transmission mechanism that perpetuates inequality.

There is a two-way relationship between environment and inequality. So while environmental degradation contributes to inequality, inequality can also contribute to environmental degradation. The mechanism here, very basically, is a political one. When you're poor, your focus is not on the complex issues of the environment and how the environment affects your economic future. Those seem too esoteric. You're focused on survival. You're focused on income and economic growth.

The result is that in democracies, the desperately poor tend to have less of an interest in pursuing policies designed to protect the environment, because their most important concern is doing whatever's necessary to get out of the current situation. So societies with more inequality will get less support for good environmental policies.

Partha Dasgupta, whom I've worked with a great deal, has emphasized the environment-inequality nexus in the context of development. It is the destitute who turn to the forest for their energy, but in doing so, they destroy their own future well-being. This behavior is individually rational, perhaps, but collectively irrational. The interesting thing is that in societies with a reasonable degree of social cohesion, social-control mechanisms may, and often do, actually work. But inequality tends to undermine social cohesion.

The importance of social cohesion was evident in a recent visit to Bhutan, the Himalayan country that has made its national objective Gross National Happiness (GNH), rather than the more traditional GDP [Gross Domestic Product]. At the start, everybody was allowed to cut down three trees a year. I asked, "How do you enforce this?" The Bhutanese answered, "Nobody would disobey." A few years later, the limit was reduced to two trees, and the Bhutanese people adapted to that.

The point is that in societies with a high degree of social cohesion, people can work together and solve some of these problems better than they can in societies with less social cohesion and more inequality. When the tide of inequality becomes too great, what economists call "social capital" tends to break down.

Let me make a few observations about this. First, it turns out that small interventions can have very big effects. That's important for those of us who are involved in policy because, quite often, we can't solve the big problems. We can't persuade our government to adopt a carbon price, but we can make a big difference even with some small interventions. An example on a national scale that is relevant in many developing countries is the adoption of more efficient cook stoves. These are cook stoves that use less energy, so that the people who use them have to cut down fewer forests. It also means they are exposed to less indoor air pollution, which is a major source of health problems in developing countries, for lungs and eyes.

Interestingly, more efficient cook stoves also help alleviate inequality because the people who bear the cost of gathering the wood and spend a very large fraction of their time doing so are women. When you have a little innovation like this, it changes the well-being of one part of society that in many developing countries is very oppressed. You might not think of distributing efficient cook stoves as gender policy or even an inequality policy. But a good environmental policy like this one can have very big effects on inequality.

The second general observation I want to make is the fact that these two-way relationships mean that there can exist multiple societal equilibria. You get an equilibrium in which you have a lot of inequality, and that leads to weaker environmental policies, and those weak environmental policies lead to a lot of inequality, and the problem perpetuates itself. But a much better equilibrium can be obtained, where you have low levels of inequality. With a low level of inequality, you have high demand for good environmental policies, and those good environmental policies then lead to less inequality. This feedback mechanism is really important in understanding that one cannot just assume the market by itself will lead to an efficient outcome. Government intervention can nudge the economy to a better equilibrium.

Another issue involves the longstanding literature on the tragedy of the commons. According to the classic thinking behind the tragedy of the commons, the real problem with overutilization of common resources is that we haven't privatized land. But the privatization agenda often leads to high levels of inequality. So while private property is one mechanism for regulation, there are other ways of regulating

asset usage. Nobel Laureate Elinor Ostrom pointed out that in some communities, people were able to get together and have social-control mechanisms without private property.

One of the arguments for the enclosure movement in the 15th, 16th, and 17th centuries in Britain and Scotland was that it prevented overgrazing. But in the process of limiting access to pastures, the movement created a lot of wealth at the top and a lot of misery at the bottom. So the enclosure movement had enormous distributional consequences. It was not, I think, the best way of solving the problem of the commons.

One of the discussion points that economists debate forever is the virtues of price versus quantity regulation in dealing with environmental issues. But we typically ignore that these different mechanisms can have very different distributional effects and that we typically cannot—or in any case do not—offset the distributional effects. From a practical point of view, one of the things we ought to be thinking about very carefully as we discuss the merits of one or another way of protecting the environment is who benefits and who loses.

What I hope has been evident from these brief remarks is that inequality is not just a moral issue—it's an efficiency issue. We pay a high price for inequality in terms of how our economy performs. If young people at the bottom don't get the education that allows them to live up to their potential, we are wasting our most valuable resource. If children of low-income parents are exposed to toxic environmental effects that undermine their potential to be fully productive, we bear a high cost as a society.

Distributional concerns need to move front and center in environmental and resource economics, especially given America's high inequality—both of outcome and of opportunity. Doing so will provide new perspectives on old policy debates and make what we say of greater relevance in the policy discourse.

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