

Oxfam America
Research Backgrounders

Climate Change and Violent Conflict:

A critical literature review

Ellen Messer

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Author information and acknowledgments

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Executive summary

A burgeoning literature explores climate change as a risk multiplier that will lead to an escalation in armed conflicts. This literature can be referred to as “climate change causes conflict” (CCCC) discourse. Among substantive factors, CCCC proponents examine implications of increasing heat and drought, as well as more-severe weather overall (i.e., more storms with greater intensity). According to CCCC adherents, these factors will cause large-scale, deadly, human migrations away from inundated seacoasts and will also push populations dependent on rainfall or irrigated agriculture to the brink of fierce competition for productive resources. Thus, both directly and indirectly, these population movements in search of access to land and water will lead to increasingly frequent and hostile confrontations. Unless everyone takes action now to mitigate climate change stressors and all impacted world environments, CCCC proponents argue that climate change will multiply the impacts of population growth and environmental degradation, which already lead to confrontations and conflicts, especially in poorly governed places in the developing world.

Without argument, common sense logic suggests that adverse environmental factors will affect people directly, by reducing livelihoods from the land and causing disruptions in local food chains, and also indirectly, as population movements cause reductions in security and health. Interconnected climate, population, and political-economic processes suggest that a warmer, more-crowded world will find more people competing for the same or scarcer water, land, and biological resources, especially as more people migrate in search of additional resource access. Human security – a concept that combines physical and personal securities with economic outlooks that expand human freedoms, especially freedom from want and freedom from fear – will certainly be challenged by climate change, which threatens economic and political disruptions, leading to increased violence and decreased standards of living. Such insecurities can multiply the numbers of routine local incidents of violence, which in turn raise the numbers of episodic intercommunal confrontations and antigovernment rebellions, revolts, and civil wars.

Yet it is also clear that the language of “conflict” and “security” (threat) have become the new terms of engagement for selling legislative regulations and investments related to climate change. Correspondingly, the language of conflict-security connections has been adopted by politicians, experts on climate change and peace, humanitarian policymakers, and development professionals who seek expanding influence in the debates surrounding CCCC discourse and professional and institutional benefits that might accrue from the impacts of

associated prevention, adaptation, and mitigation directives. There is also at work a political mentality fostering a culture of fear regarding climate change that mimics that of the “war on terror.” Comparable messages in the media, trumpeting the triumph of good (“green” values) over evil (waste and excess), supersede evidence showing precisely the steps by which the impacts of global warming are proceeding and what steps toward mitigation, adaptation, and resilience logically follow, or how best to fund them.

In fact, climate change and conflict need to be defined in context. The entire spectrum of CCCC positions anticipate that climate change will transform resource bases and so produce conflict (i.e., competition) over access to land, water, and other resources. Interpretations differ, however, over (1) whether such strivings will end in destructive violence or constructive cooperation, (2) whether the principal sources of conflict and violence are climate change or political, and (3) if the principal sources are political, what to do about them. Whereas many tend to view all conflict as threat, conflict-transformation professionals stress that not all conflicts are destructive: some encourage technological innovation through challenge-response mechanisms and social cooperation.

In a warmer, more weather-unstable, more crowded world, where conflict is to be expected, local competition for resources and power will not be easily or safely repressed. However, it is not *conflict* but *conflict management* that should be of utmost concern; that is, the ways in which environmental and political stressors interact in the presence of ameliorative or exacerbating institutions are the keys to overcoming violence.

The relationship between climate change and violent conflict is complex, country-specific, and also localized within nations. The main impact pathways described in the literature include competition for scarce environmental resources, especially arable land and clean water, but also habitable land, which is likely to become scarcer, more crowded, and more costly if worst-case scenarios, especially of flooding, come to pass. An important intermediate factor driving resource competition and conflict is human migration, especially into areas that manage to stay inhabitable while conditions deteriorate around them. Additionally, food insecurity could be an important triggering factor for conflict, as it has been in the past.

The experts disagree, however, on the emphasis paid to political over natural factors, as underlying “root” or “trigger” causes. Government policies that favor one political/geographic/ethnic/religious (PGER) group over another, creating inequities in access to resources, add to historic inequalities, fan PGER competition for resources, and so expand motivations for local or more far-

reaching conflict. In active or post-conflict situations, governments that fail to dampen conditions of local livelihood loss, inadequate access to food, and other local indicators of human suffering due to some combination of insults from natural and human sources, create conditions for unending or renewed conflict.

That said, most of the geographic areas of greatest concern—including the Darfur region of Sudan, Ethiopia, Israel-Palestine, and Bangladesh, which serve as case studies in the report—are already in conflict, or at risk because of past conflicts, which suggests that even in the absence of climate change, conflict would occur. They also feature large numbers of displaced people. The literature on Sudan (Darfur) is most explicit on these points. The literature is also clear that climate change is expected to be the great multiplier of environmental deterioration, demographic displacements, and conflict threats. Substantial attention to worst-case scenarios on climate change, however, suggests that preparation for climate change, in lieu of making already bad situations worse, could have the salutary effect of driving cooperation and innovation to mitigate the potentially damaging impacts of climate change. Proposals to engage civil society in planning, by raising awareness and participation in the planning process, could improve overall response and limit damages. But such positive outcomes require very careful planning on the parts of humanitarian and development agencies and also a spirit of common purpose on the part of governments, intergovernmental organizations, and the multiple agents and agencies of civil society, who must press for win-win rather than win-lose outcomes.

Additionally, “conflict-sensitive” approaches to development need to take into account the ways in which climate change and mitigation efforts might be used as intentional weapons, become sources of discontent, and lead to violence. In this mix, immediate attention to food security and human rights implications is paramount, including situations where demand for biofuels displaces local subsistence farmers from their customary territories, and where demand and supply for biofuels spike food prices and so can trigger riots where there exist other sources of political malaise and instabilities. The follow-up question is how this political context can shape and be shaped by conflict-sensitive climate change policies that will create synergies through peacebuilding and development activities. The climate policies also emphasize conflict-concerned strategies that look forward to adaptation that includes conflict transformation or prevention, and not just reduced greenhouse gas emissions or adequacy of material water supplies.

Overall findings suggest that the original framing on CCCC is misleading. It is not simply that there are areas of agreement and disagreement on climate change and conflict links. All agree that climate change is always associated with

conflict. The more constructive question is how political context shapes conflict and its transformations. In fact, many experts attest that it is inaccurate to conclude that water scarcity, drought, desertification, or climate change cause political instability and rebellions; in their opinion, it is the political context that shapes such conflicts and natural resource degradation.

To a large extent, country experts trace more-complex causal pathways and indirect or multifaceted relationships. Nonexperts assert more simply: “climate change causes conflict.” Every professional and political interest with some other humanitarian or development issue to press can find links to climate change and conflict, which gain them a hearing in the current political context. The media, as well as advocates, tend to selectively pick their examples and statements from a wider range of political-economic, migration, population growth, economic deterioration, economic development, or humanitarian analyses. They draw conclusions that all these sources warn of conflict “threats” stemming from climate change, yet the main sources of threat are usually political-economic decision making. Cautionary notes are disregarded in the run-up to fear-mongering, based on worst-case rather than likely scenarios. Out-of-context citations are increasingly visible in blogs, media stories, and “reputable” nongovernmental organization (NGO) summaries of issues.

Humanitarian thinking has itself undergone a shift, focusing not just on the consequences of climate change but increasingly on the causes as well. Examples of the new foci include resilience for prevention, mitigation, and adaptation, and assets-based approaches to poverty-reduction strategies. These new frameworks create challenges of defining humanitarian roles and institutional agendas and overlap with development and human rights advocacy organizations.

Humanitarians spend increasing amounts of time, effort, and resources crafting norms and codes of conduct and responding to their “identity crisis” (humanitarian typology exercises) for what is an expanding multibillion-dollar business, where the business of not taking political sides is also a political stance. But these efforts may be losing sight of the overall goal, which is self-reliant prevention and response capacities on the parts of grassroots communities and other social-response agents, particularly in developing countries.

In order to (a) help shore up communities against prospective damage from climate change, and thereby avert conflict, and (b) advocate for action to address climate change in their countries of origin, NGOs involved in humanitarian response should:

1. Emphasize responsible media presentations that review and critique the evidence so policymakers, practitioners, and the public can develop informed

opinions based on logic and evidence rather than on slanted sound bites that homogenize and sensationalize information to attract attention.

2. Identify promising interventions for CCCC prevention and remediation and then, with appropriate partners, take action. Regardless of its truth or error, the implications of the CCCC discourse are promising because they point the way toward new humanitarian and development institutions and approaches that will be needed to build resilience in twenty-first-century communities.
3. Exercise their comparative advantage working with communities and connecting them to other social and political response units to construct ground-up monitoring and response capacities and global monitoring and coordination mechanisms.
4. Help negotiate who takes on new and old tasks with new players and a new division of labor in the humanitarian regime. The new humanitarian and development outlooks under CCCC scenarios raise substantive questions regarding appropriate roles for public and private military, civilian, and community-based organization contractors in an increasingly interdependent and globalizing world, where UN agencies and other international actors seek to influence and contribute productively to actions. NGOs should be setting and seated at the tables where planning, implementation, monitoring, and evaluation analysis and strategies go on. They should also be modifying and updating their own roles in advocacy in their countries of origin, to press for effective and responsible policies and public understanding of climate change and required changes in behaviors.

Abbreviations

BRIC	Brazil, Russia, India, and China
CBO	community-based organization
CCCC	climate change causes conflict
CIA	Central Intelligence Agency
DCDC	Development, Concepts, and Doctrine Center
DRC	Democratic Republic of Congo
DRR	disaster risk reduction
ECC	Environmental Conflict and Cooperation
ENSO	El Niño-Southern Oscillation
FIC	Feinstein International Center
HAP	Humanitarian Accountability Partnership
HFP	Humanitarian Futures Program
IASC	Inter-Agency Standing Committee
IDP	internally displaced person
IFPRI	International Food Policy Research Institute
IGO	intergovernmental organization
IISS	International Institute of Strategic Studies
INGO	international nongovernmental organization
IOM	International Organization for Migration
IPCC	Intergovernmental Panel on Climate Change
MDG	Millennium Development Goal
NGO	nongovernmental organization
NIC	National Intelligence Council
OCHA	Office for the Coordination of Humanitarian Affairs
OPEC	Organization of the Petroleum Exporting Countries
PGER	political-geographic-ethnic-religious
SSA	sub-Saharan Africa
TNC	transnational corporation
UK	United Kingdom
UN	United Nations
UNAMSIL	UN Mission in Sierra Leone
UNDP	UN Development Program
UNEP	UN Environment Program

UNICEF	UN Children’s Fund
UNISDR	UN International Strategy for Disaster Reduction
US	United States
WCED	World Commission on Environment and Development

Overview

Introduction

Separate but connected literatures in environmental and peace studies explore climate change as a risk multiplier that will lead to an escalation in armed conflicts. Combining general theoretical and framing tracts with more-detailed local, national, and regional case studies, this combined literature has produced a new discourse, referred to here as “climate change causes conflict” (CCCC). Among substantive factors, supporters of the CCCC idea examine implications of increasing heat and drought, plus more-severe weather overall. These scenarios envision possible rise in international sea levels due to glacial melt, and then increasing desiccation due to evaporation and cessation of glacial melt-off, lower or more unstable river-water flows, plus more storms with greater intensity.

According to the CCCC conception, these factors will cause large-scale, deadly, human migrations away from inundated seacoasts and also push populations dependent on rainfall or irrigated agriculture to the brink of fierce competition for productive resources. Both directly and indirectly, and intra- and inter-regionally, these population movements in search of access to water and land will lead to increasingly frequent and hostile confrontations between settlers and settled. Unless everyone takes action now to mitigate climate change stressors and all impacted world environments, climate change will multiply the impacts of demographic growth, population displacements, and environmental degradation, which already lead to violent confrontations and conflicts, especially in poorly governed, badly managed places in the developing world.

Contributors to this CCCC discourse include UN officials, national governmental analysts of climate data, nongovernmental organization (NGO) advocates of climate change prevention, adaptation, and mitigation, and community-based observers and the media. Water provides the most outstanding example. For more than 30 years, UN officials and other opinion makers have asserted that the world’s next wars will be over water, not oil (Box 1). Despite debatable supporting evidence and findings to the contrary (e.g., Barnaby¹; Gleick²; Wolf³),

1. Wendy Barnaby, “Do Nations Go to War Over Water?” *Nature* 458 (2009): www.nature.com/nature/journal/v458/n7236/full/458282a.html.

2. Peter Gleick, “Water Conflict Chronology,” Pacific Institute for Studies in Development, Environment, and Security, (November 2008): www.worldwater.org/conflictchronology.pdf.²

3. A. Wolf, “Conflict and Cooperation Along International Waterways,” *Water Policy* 1,2 (1998): 251–265: www.transboundarywaters.orst.edu/publications/conflict_coop/.

this perspective, now tied to the risk multiplier of climate change, and the corollary that climate change will cause an escalation in armed conflicts, continues to attract adherents.

Related to this, humanitarians concerned about populations displaced by large water-management projects, also support the CCCC idea, which predicts even greater environmental disruptions that will aggravate human population movements and clashes (e.g., Christian Aid⁴). Especially those engaged in research on desertification and violent conflicts in sub-Saharan Africa (see critical review in Benjaminson⁵) or flooding, population movements, and violence in South Asia (UN Population Fund⁶) find CCCC a compelling and convenient platform for advocacy on behalf of those affected. They join neo-Malthusian colleagues who anticipate that resource scarcities connected to climate change will cause human suffering and violent warfare (e.g., Homer-Dixon⁷).

Box 1. Brief selected history of assertions that climate change leads to conflict, along with description of qualifying situations, pathways, and contexts.

1973: Central Intelligence Agency (CIA) predicts climate change will lead to food insecurity, and worldwide political disorder.⁸

1991: UN Secretary-General Boutros Boutros-Ghali announces the next wars will be over water (quoted in Dabelko⁹).

1995: Ismail Serageldin (World Bank) repeats the assertion that the wars of the 21st century will be fought over water, not oil (based on a perspective simmering since the 1970s) (quoted in Crosette¹⁰).

(continued)

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4. Christian Aid, "Human Tide: The Real Migration Crisis" (May 2007): www.christianaid.org.uk/Images/human-tide.pdf.
 5. T.A. Benjaminson, "Does Supply-Induced Scarcity Drive Conflicts in the African Sahel? The Case of the Tuareg Rebellion in Northern Mali," *Journal of Peace Research* (2008): 819.
 6. UN Population Fund, "State of World Population 2009," Ch. 3 (2009): www.unfpa.org/swp/2009/en/ch3.shtml.
 7. T. Homer-Dixon, *Environment, Scarcity, and Violence* (Princeton, New Jersey: Princeton University Press, 1999).
 8. CIA, "Potential Implications of Trends in World Population, Food Production, and Climate" (1974).
 9. G. Dabelko, "Water 'Wars' or Water 'Woes'? Water Management as Conflict Management," presentation at the Woodrow Wilson International Center for Scholars (March 4, 2008): www.wilsoncenter.org/events/docs/Dabelko.pdf.
 10. Barbara Crossette, "Severe Water Crisis Ahead for Poorest Nations in the Next Two Decades," *The New York Times* (August 10, 1995).

2001: UN Secretary-General Kofi Annan asserts water competition will be source of conflict and wars in the future.¹¹

2007: UN Secretary-General Ban Ki-Moon blames Darfur conflict at least in part on resource scarcities, especially water.¹²

2009: CIA establishes climate change monitoring unit.¹³

Common sense logic

Without argument, common sense logic suggests that adverse environmental factors will affect people directly – by reducing livelihoods from the land and disruptions in local food chains – and also indirectly – as population movements cause reductions in security and health overall. Interconnected climate, population, and political-economic processes suggest that a warmer, more-crowded world will find more people competing for the same or scarcer water, land, and biological resources, especially as more people migrate in search of additional resource access. Human security – a concept that combines physical and personal securities with economic outlooks that expand human freedoms, especially freedom from want and freedom from fear – will certainly be challenged by climate change, which threatens economic and political disruptions, leading to increased violence and decreased standards of living (see Commission on Human Security¹⁴). Such insecurities can multiply the numbers of routine local incidents, which in turn raise the numbers of episodic intercommunal confrontations and antigovernment rebellions, revolts, and overthrows (civil wars), in contexts of perceived resource scarcities or escalating competition for control.¹⁵ This logic also draws on conventional Malthusian thinking, which envisions that scarcities (in the Malthusian case, caused by population growth) will always lead to elevated human suffering – famine, illness, warfare, and death¹⁶ – a view most recently reframed as “resource-scarcity” as a cause of conflict.¹⁷

11. K. Annan, question and answer, Federation of Indian Chambers of Commerce and Industry, New Delhi (March 15, 2001) (SG/SM/7742).

12. Ban Ki-Moon, “A Climate Culprit in Darfur,” column, *Washington Post* (June 16, 2007).

13. CIA, “CIA Opens Center on Climate Change and National Security,” press release (Sept. 25, 2009): <https://www.cia.gov/news-information/press-releases-statements/center-on-climate-change-and-national-security.html>.

14. Commission on Human Security, “Human Security Now” (2003): <http://humansecurity-chs.org/finalreport/index.html>.

15. M.X. Tadjoeddin and S.M. Murshed, “Socioeconomic Determinants of Everyday Violence in Indonesia: An Empirical Investigation of Javanese Districts, 1994–2003,” *Journal of Peace Research* 44, 6 (2007): 689.

16. Thomas Malthus, *An Essay on the Principle of Population* (Oxford World Classics Paperback, 2004 edition, 1789).

17. Homer-Dixon, *Environment, Scarcity, and Violence* (1999).

Contrary to this seemingly incontrovertible logic, however, carefully documented studies show that scarcity can also be a positive stimulus, encouraging technological and institutional innovation through challenge-response mechanisms (i.e., Boserup¹⁸). Scarcity can also encourage social cooperation, on the logic that the benefits of cooperation usually outweigh the costs and losses associated with widespread violence (see introductory discussion in Grover¹⁹). This logic appears to apply in particular to institutional arrangements governing water resources (e.g., Wolf²⁰; Grover²¹). Cooperation also supersedes conflict response in certain disaster situations; witness the aftermath to the 2004 tsunami in South Asia, which saw Acehnese political leaders and people cooperating with Indonesian figures as they took joint steps to limit suffering and build steps toward peace.²²

Terror mentality and language of security threats

Notwithstanding, the language of “conflict” and “security (threat)” have become the new terms of engagement for selling legislative regulations and investments related to climate change. Correspondingly, the language of conflict-security connections has been adopted by politicians, experts on climate change and peace, humanitarian policymakers, and development professionals. All seek expanding influence in the debates surrounding CCCC discourse and professional and institutional benefits that might accrue from the impacts of associated PAM directives.

There is also at work a political mentality fostering a culture of fear regarding climate change that mimics that of the “war on terror.” Comparable messages in the media, trumpeting the triumph of good (“green” values) over evil (waste and excess), supersede evidence showing precisely the steps by which the impacts of global warming are proceeding and what steps toward mitigation, adaptation, and resilience logically follow, or how best to fund them. In the US political arena, where the Pentagon commissioned²³ (but then largely disowned) its own

18. Ester Boserup, *The Conditions of Agricultural Growth: The Economics of Agrarian Change under Population Pressure* (Chicago, Illinois: Aldine, 1967).

19. V. Grover, ed., *Water: A Source of Conflict or Cooperation?* (Enfield, New Hampshire: Science Publishers, 2008).

20. Wolf, “Conflict and Cooperation Along International Waterways” (1998).

21. Grover, *Water: A Source of Conflict or Cooperation?* (2008).

22. UN News Center, “Five Years After Indian Ocean Tsunami, Affected Nations Rebuilding Better—UN” (December 29, 2009): www.un.org/apps/news/story.asp?NewsID=33365.

23. P. Schwartz and D. Randall, “An Abrupt Climate Change Scenario and Its Implications for United States National Security” (2003): <http://360.monitor.com/downloads/ClimateChangeReportFIN.pdf>.

study of extreme conflict scenarios following from climate change (see Piltz²⁴), this “culture of fear” appeals to some environmentalists and to some supporters of climate change legislation. For example, Senator John Kerry (D-Massachusetts), Chairman of the Foreign Relations Committee, in an address at George Washington University on September 10, 2009,²⁵ asserted:

Worldwide, climate change risks making the most volatile places even more combustible.... Climate change injects a major new source of chaos, tension, and human insecurity into an already volatile world. It threatens to bring more famine and drought, worse pandemics, more natural disasters, more resource scarcity, and human displacement on a staggering scale. We risk fanning the flames of failed-statism and offering glaring opportunities to the worst actors in our international system. In an interconnected world, that endangers all of us.

Such general fear-mongering, however, appears to have definite limits among seasoned military personnel whose testimony instead advocates a more measured mitigation course, focused on more-substantive issues, such as US energy policies. For example, in lieu of vague security assertions, Retired Vice Admiral Dennis McGinn, in testimony before the Senate Foreign Relations Committee, recommended that reduction in fossil fuel dependency should form part of national-security-enhancing (energy) policy. This would limit US military exposure in petroleum-producing nations otherwise hostile to US democratic interests.²⁶

Similarly, international relations experts, after predicting unprecedented human turmoil and suffering if the current climate change course continues, tie climate-change mitigation and adaptation efforts – and impacts – to social development policies, especially local empowerment that increases awareness and capacities for change (e.g., Smith and Vivekenanda²⁷). In particular, in the run-up to the 2009 Copenhagen summit on climate change they urged greater coordination among climate change, humanitarian, and development specialists with an eye to

24. R. Piltz, PBS “Frontline” Interview (2006): www.pbs.org/wgbh/pages/frontline/hotpolitics/interviews/piltz.html.

Ploughshares, “Armed Conflicts Report: Indonesia-Aceh” (January 2007): www.ploughshares.ca/libraries/ACRText/ACR-IndonesiaAceh.html#Political.

Piltz asserts that the George W. Bush administration was largely responsible for disowning this report as an example of the kind of “worst case scenario” that the Pentagon tends to commission.

25. John Kerry, “Kerry calls Climate Change New Challenge to Global Stability,” press release (2009): www.boston.com/news/politics/politicalintelligence/2009/09/kerry_to_kick_o.html.

26. Dennis McGinn, “Climate Change and Global Security: Challenges, Threats and Global Opportunities,” testimony before the Senate Committee on Foreign Relations (July 21, 2009): <http://foreign.senate.gov/imo/media/doc/McGinnTestimony090721p1.pdf>.

27. Dan Smith and J. Vivekenanda, “A Climate of Conflict: The Links Between Climate Change, Peace, and War,” International Alert (2007): www.international-alert.org/publications/pub.php?p=322.

negotiation and regulation of conflict-potentiating behaviors (e.g., Smith and Mehrota²⁸).

NGO positionings on CCCC

In this political context, where testimonies include bold, broad, CCCC assertions, but also suggest more-specific impact paths for further investigation and possible interventions, it is useful to review the evidence underlying CCCC arguments and ask:

What should NGOs, with partners in the humanitarian and development assistance business, be doing (a) to help shore up communities against prospective damage from climate change, and thereby avert conflict and (b) to advocate for climate change supporting actions in countries of origin?

A summary of the main points in this review essay emphasize that both climate change and conflict need to be defined in context. In a warmer, more weather-unstable, more-crowded world, where conflict is to be expected, local competition for resources and power will not be easily or safely repressed. However, it is not “conflict” but conflict management that should be of utmost concern, that is, the ways in which environmental and political stressors interact in the presence of ameliorative or exacerbating institutions are the keys to overcoming violence.

Below it will be argued that cautionary-to-doomsday CCCC formulations and policy advisories, favored by many climate scientists and policymakers, are based on abstractions and extrapolations that so far outpace substantive findings and knowledge bases. “Possibility of war” versus “possibility of peace” opinions tend to underplay the complexities of political and environmental interactions, in particular the ways that management of environmental resources – past, present, and future – play salient roles in determining access, perceptions of scarcity, and consequent peace or conflict outcomes. Significantly, the linkages between political control over, and technological management of, and more or less equitable distributions of, essential resources tend to be extremely situation-specific.

For NGOs this means *first and foremost* responsible media presentations. NGOs have a responsibility to review and critique the evidence so various policymakers, practitioners, and publics can develop informed opinions that

28. Dan Smith and Shutri Mehrota, “A Climate of Conflict: Considerations for Climate Adaptation in Fragile States,” Woodrow Wilson International Center (June 10, 2009). Video and summary of event: www.wilsoncenter.org/index.cfm?topic_id=1413&fuseaction=topics.event_summary&event_id=536413.

consider logic and evidence beyond the slanted sound bites of the media that homogenize and sensationalize information to draw attention.

Second, based on specific case studies of impact pathways, NGOs should identify promising interventions for CCCC prevention and remediation, and then, with appropriate partners, take actions. Whatever its truth or error, the implications of the CCCC discourse are promising because they point the way toward new humanitarian and development institutions and approaches, which will be needed to build resilience into 21st century communities. Whether or not such dire “security” predictions are materially or informationally well-grounded, all communities, interlinked with each other, within states, and also connected to the wider international community, will need to construct disaster risk reduction plans and integrate them successfully into their educational and infrastructural fabrics if the world is to prosper peacefully over the next century and millennium.

Third, NGOs should exercise their comparative advantage working with communities and connecting them to other social and political response units to construct ground-up monitoring and response capacities and global monitoring and coordination mechanisms.

Among the most important themes raised in these climate change conflict scenarios are the requirements for better “ground-up” monitoring and response capacities and global monitoring and coordination mechanisms. These should prove especially useful in parrying the threats of too much or too little water (water in the wrong places at the wrong times), in assisting weather-resistant construction, in energizing emergency and early-warning communications and response systems, and in designing and delivering post-disaster recovery packages, including seeds, tools, fuel, vehicles, food, and medical care. Local to global early warning and response training, along with better understanding about the ways individual behavioral choices contribute to climate change, are part of an overall demand for more information sharing, awareness, and readiness preparation, at all social levels, the world over. It has been argued that such grassroots actions, and not just mitigation of greenhouse gases at the national level, can help mitigate climate threats while building peaceful structures for resilience (see e.g., Smith and Vivekenanda²⁹; Smith and Mehrota³⁰).

Fourth, NGOs should help negotiate who takes on new and old tasks with new players and a new division of labor in the humanitarian regime. The new humanitarian and development outlooks under CCCC scenarios raise

29. Smith and Vivekenanda, “A Climate of Conflict” (2007).

30. Smith and Mehrota, “A Climate of Conflict” (2009)..

substantive questions regarding appropriate roles for public and private military, civilian, and community-based organization contractors in an increasingly interdependent and globalizing world, where UN agencies and other international actors seek to influence and contribute productively to actions. NGOs should be setting and seated at the tables where planning, implementation, monitoring, and evaluation analysis and strategies go on. They should also be modifying and updating their own roles in advocacy in their countries of origin, to press for effective and responsible policies and public understanding of climate change and required changes in behaviors.

Methodology

Original terms of reference for this project were to (1) identify areas of agreement connecting climate change and conflict, (2) identify areas of disagreement on climate change and conflict links, (3) identify areas where additional research is needed, and (4) consider the institutional implications for the humanitarian response system, especially for the US, Oxfam America, and associated civil-society humanitarian operations.

Critical literature review

Primary and secondary sources draw on four streams of literature. The first consists of science and policy studies by climate scientists and climate change policymakers. Their chief reference points are the science and policy literature of the Intergovernmental Panel on Climate Change (IPCC)³¹ and supporting articles about substantive climate change issues in peer-reviewed scientific journals. The second includes peace and conflict studies by reputable social science (geography, political science, economics, anthropology, international studies, policy studies) scholars, who present scientifically framed, evidence-based, comparative studies of conflict and the factors underlying peace or conflict outcomes in peer-reviewed journals. A third category are NGO and think tank reports and news briefings. These may or may not incorporate the research-quality standards of peer-review or evidence because their research is designed to support particular policy positions, although not all reports present biased advocacy positions. A final category is composed of media reports. They can exercise enormous influence over public opinion, policy, and personal behaviors through direct stories from climate-change-affected areas, and by their framing of news based on interpretations of the first three categories.

31. IPCC, "Climate Change 2007: Synthesis Report" (November 2007): www.ipcc.ch/pdf/assessment-report/ar4/syr/ar4_syr.pdf.

Specifically, the first phase of literature review began with an opportunistic sample of recent policy studies by several NGO policy organizations, think tanks, and operational-research centers: Oxfam America, Oxfam Great Britain, CARE, the Stimson Center, and the Humanitarian Horizons project coordinated by the Feinstein International Center at Tufts University and their partners. It also considered various military sources, as these have influenced US Congressional and White House national security debates and legislative proposals. This initial stage summarized and categorized their themes, then checked their sources to identify their evidence bases and determine whether the evidence cited supported their conclusions.

A parallel phase of research explored publications on climate and environmental themes of desertification and river system and other water management, and also probed case studies on climate-stressed geographic areas (Ethiopia; Darfur, Sudan; Israel-Palestine; and Bangladesh). Each region has been highly associated with CCCC positions in current-through-future scenarios, but for somewhat different reasons. The critical review endeavored to present and evaluate evidence and possible reasons for privileging CCCC conclusions among specific policy and practice organizations.

The next phase of research reviewed how substantive issues of CCCC had been treated in the scholarly literature on peace and conflict, and also how scientific findings on the impacts of managed processes of climate change, such as “restoration ecology,” might influence expectations of conflict. Throughout, this review paid careful attention to the use of evidence and to definitions of substantive terms, as well as to the political context of news releases and media reports across the spectrum of sources. One general conclusion regarding these sources is that very few think tank, NGO, or media sources asserting CCCC use peer-reviewed information.

Structure of the paper

The results of this critical literature review of ideas are divided below into four sections. The first reviews background to the historical political “climate change and conflict” discourse and the substantive evidence for climate change-conflict connections.

The next section reviews prominent case studies of interest, with more in-depth analysis of substantive findings, examples of the rhetoric influencing policy and diplomacy, with their implications for climate change-conflict connections. These case studies (Darfur, Sudan; Ethiopia; Israel-Palestine; and Bangladesh) take a political ecology approach that tries to consider both sides of the CCCC outlooks:

the climate change stressors and the community-to-national respondents. The Darfur, Sudan, case, which receives the most political attention, is lengthier and more detailed than that of neighboring Ethiopia, where drought is less associated with high-profile (genocidal) conflicts. Israel-Palestine also has received substantial attention from international, national, subnational, and second-tier diplomatic agents and agencies. More briefly, the text also considers the Asian case of Bangladesh, which is threatened with more-frequent floods and land loss, but features BRAC and other large NGOs as response agencies. All have been chosen because they appear frequently in the literature and present contrasting instances of the salience of environmental scarcity versus political identity factors in explaining conflict causation.

In light of the case studies, the third section reviews implications for humanitarian institutions and practice.

The final section recommendations reflect findings from this literature review. In particular, they suggest that NGOs such as Oxfam America are well-placed to undertake educational efforts, to improve grassroots contributions and networking, and to encourage more responsible media attention.

Clarifying climate change causes conflict discourse

Defining and refining terms

The conceptual and institutional landscape of climate change causes conflict (CCCC) discourse features quite varied definitions of such key terms as conflict, security, climate change, and causal connections. This literature also demonstrates enormous variation in treatment of substantive land, water, and population issues and sometimes ambiguous labels for voluntary versus involuntary population movements and resettlements, as well as who are “displaced” or “refugee” people—all of which affects who will be helped, and how, by international institutions with narrow mandates. Writers often employ more lofty than grounded discussions of the influences of principal “drivers” of global change, which, like all the terms above, have cultural-political dimensions in their definitions and causal connections. A critical literature review tying climate and conflict must begin by defining these terms and understandings, because they influence how one “reads” the arguments and findings.

Conflict

Conflict needs to be defined in context and consider positives as well as negatives.

Under conditions of climate change, stresses, strains, encounters, and confrontations will characterize human relationships at all social levels. The entire spectrum of CCCC positions anticipates that climate change will transform resource bases and so produce conflict (“competition”) over access to land, water, and other resources. Interpretations differ, however, over whether such strivings will end in destructive violence or constructive cooperation, and also whether the principal sources of conflict and violence are climate change related or political, and if political, what to do about them. Whereas many tend to view all conflict as a threat, conflict-transformation professionals often view conflict as constructive (see reviews of positions in Grover 2008). The key to socially constructive conflict is maintenance of mutual respect between the parties so that they can work toward suitable, mutually advantageous, non-violent changes of status and conditions. Gopin summarizes this positive-minded position succinctly:

Conflict itself is often quite constructive in human relations, leading people toward shared goals, greater efficiency, greater justice, and greater trust. It is the destructive aspects of conflict, such as the verbal and physical abuse of the parties, that is the most damaging, and which creates a cycle of retaliation. Intervention is required to break that cycle or spiral of retaliation.³²

He adds, “The techniques of peacebuilding are designed to eliminate destructive elements, and point parties toward constructive pathways, which include reconciliation processes of their own making.”³³

Thus conflict can be positive or negative in its impacts, which may turn violent – or not, depending on pre-existing conditions, current contexts, and outlooks favoring hopelessness versus hopefulness. Unfortunately, the division of labor between “research” and “advocacy” means that few CCCC statements document the climatic and political steps that move such conflict process from word to deed, to hostility or reconciliation, in particular situations.

Security

Security needs to be defined as more than the absence of threats and consider human freedoms.

Security, sometimes defined negatively as the absence of threats (military, social, personal) or positively as the experience of multiple freedoms (especially freedom from want and freedom from fear) needs to be conceptualized at multiple levels. Traditional security concerns are “national” and focused on military preparedness against political or natural threats, or their combination. More recent security policy widens the concept of security threats to consider the larger realms of economic well-being – access to food, health, clean water and environment, and, since the 1980s, “global warming.”

Human security considers basic threats to human life in terms of individual civil-political and economic-social-cultural human rights and freedoms. These terms include freedom from arbitrary threats of violence and freedom from severe economic deprivations, violations of which independently and interdependently undermine human well-being and threaten individual or group survival. UN Development Program (UNDP) leaders, beginning in 1994, launched this new conceptual language and approach in their “Human Development Report

32. M. Gopin, *To Make the Earth Whole: The Art of Citizen Diplomacy in an Age of Religious Militancy* (Lanham, Maryland: Rowman and Littlefield, 2009): 30 n. 39.

33. *Ibid.*, 20.

1994,”³⁴ in part to connect environmental change and sustainability issues to human rights and security within this new synthesizing framework (see Brauch³⁵ and Dalby³⁶ for analyses of these connections). UNDP also introduced various related human development indices, calculated for each country, which were then ranked in subsequent UNDP reports.³⁷ The definition of “human security” introduced by UNDP, and subsequently quoted in the Commission on Human Security report (which contributes the definition of human security adopted by most political commentators), is:

The protection of the vital core of all human lives in ways that enhance human freedom and human fulfillment. Creating political, social, environmental, economic, military, and cultural systems that together give people the building blocks of survival, livelihood, and dignity.³⁸

This commission’s report (the commission was co-chaired by Sadako Ogata, one of the 1990s premier humanitarians, and economic philosopher Amartya Sen, whose ideas and work with UNDP and the UN University’s World Institute for Development Economics Research helped inspire the Millennium Development Goals process) considers six areas vital for protecting people from destructive poverty and violence. Three are especially relevant for addressing the climate-conflict relationship: protecting people in violent conflict, protecting and empowering people on the move, and protecting and empowering people in post-conflict situations. Significant also, this human-security report calls for the participation of the public, the private sector, and civil society actors in implementation of these protections. This “participatory” language is also part of the “climate change” response rhetoric, but often left out of official security discussions, which focus predominantly on military preparedness and future demands on the military in their roles as responders.

Food security is a related concept that describes food adequate to meet individual, household, community, and national nutritional needs, with dignity (culturally acceptable food) and in sustainable ways (not at the expense of future generations). It offers positive framings of “hunger” problems, which are conceptualized as food shortage (availability at the aggregate national level), food poverty (access at the household level), and food deprivation (individual

34. UNDP, “Human Development Report 1994: New Dimensions of Human Security” (1994).

35. H.G. Brauch, “Conceptualizing the Environmental Dimension of Human Security in the UN,” “Rethinking Human Security,” *International Social Science Journal* 59, supplement 51 (2008).

36. S. Dalby, “Environmental Change,” *Security Studies: An Introduction*, ed. P.D. Williams (New York: Routledge 2008).

37. UNDP, “Human Development Report” (1994).

38. Commission on Human Security, “Human Security Now” (2003).

malnutrition).³⁹ The Spanish language terms *vigilancia* and *seguridad* communicate the two senses of “vigilance” and “security” that resonate in food policy and planning. It is more common to think of food security in terms of “risks” (weather, price increases) than “threats” and in terms of “adaptations” or “coping strategies” than “threat reductions.” Whereas countries have strategic energy plans, they have “food security” plans that are less obviously “strategic.” These subtle differences are more than rhetorical in that in most cases they indicate a bizarre failure to consider food a strategic resource. This is in part because the global community, at least since 1974, has made food transfers to countries suffering threat of starvation a political as well as moral imperative. Arguably, wars that used to be self-limiting – because countries ran out of food and farmer-combatants who provided the ground troops wanted to return to their plots to sow crops – are now less so. This is in part because these food transfers provide fungible food resources that keep war-mongering leaders in power and in part because agricultural occupations have been undermined by multiple decades of warfare.

Livelihood security is an additional “security” term, which refers to occupational sources of income at the household level. Livelihoods also require protection to prevent suffering, deprivation, and violence.

These terms have only recently been connected to “environmental” and other “security” issues, although demand for food or the right to feed oneself historically has been a potent prod to political uprisings and conflict, and foodwars, the intercausal connections between food and conflict, are a significant and continuing cause of hunger, particularly in sub-Saharan Africa (SSA).⁴⁰ They present the additional analytical advantage that they distinguish multiple and discrete social units of analysis, at multiple political, geographic, and social scale.

This enlarged security business, which in the past involved mostly diplomatic and policy negotiations among sovereign states, increasingly involves non-state actors, for-profit business, and other public actors and agencies. As a result, responses to crises increasingly cross military and civilian lines through so-called “military humanitarianism,” but also through civilian response corps, who assume functions previously handled by military-led “civil affairs officers” or “national guardians.”

39. L. DeRose, E. Messer, and S. Millman, *Who's Hungry? And How Do We Know? Food Shortage, Poverty, and Deprivation* (Tokyo: United Nations University Press, 1998).

40. E. Messer, “Food Wars: Hunger as a Weapon of War in 1994,” *The Hunger Report: 1995*, eds. E. Messer and P. Uvin (Amsterdam: Gordon & Breach, 1996).

Such civil-military boundary crossing characterizes projected responses to future disasters (see, e.g., in the case of China, in a large-scale case study developed in Borton⁴¹) and also current climate mitigation efforts by civil-society organizations and networks (see various post-conflict-reconstruction activities and climate-change-planning activities orchestrated by BRAC⁴²). In addition, UN and regional institutions, such as the African Union, since 2001 have embraced a new multi-institutional “responsibility to protect.” This now includes widespread nongovernmental organization (NGO) collaboration for the purpose of communicating and implementing standards to protect people from crimes against humanity,⁴³ which might include failure to protect people against the deadly impacts of climate change.

These expanding concepts of “security” and conflict causation attract and involve new institutional classes of humanitarian responders, as well as more conflict-sensitive development practice. The UN and other multilateral institutions, drawing on political-economic, conflict-transformation, and human-rights advisors, have been contemplating how new categories of humanitarian agents and agencies, which include private-sector business, which can teach strategic thinking and business skills, can help avert conflicts stemming from increasingly strained competition for natural resources and extreme economic deprivation (see, e.g., Ruggie⁴⁴). If they are to contribute effectively to diagnosis and management of conflict, and so help produce a more stable, just, and equitable world, these new classes of humanitarian responders will also require additional training. They will need to understand how to interpret substantive factors and evidence related to conflict and climate change. These substantive factors include land use, water, and population (growth and migration) issues, but also political-economic factors of power and management dynamics, which, given the complexity of issues, also involve considerations of social and political saliency and scale. These substantive factors are considered in the next section, “Causal connections”; the classes of humanitarian agents and agencies that form part of the expanded humanitarian context and call for new humanitarian structures, appear in the section following, “Social scale.”

These various categories of security threats are perceived differently by military, civilian aid, and local agents who prepare for and respond to humanitarian emergencies of various kinds. A key goal of those in the humanitarian business is

41. John Borton, “What Will the Humanitarian System Look Like in 15–20 Years?” Internal Drivers study of the Humanitarian Horizons Project, Feinstein International Center (FIC), Tufts University (2009).

42. See www.brac.net.

43. International Coalition for the Responsibility to Protect, “Report on the General Assembly Plenary Debate on the Responsibility to Protect” (2009): <http://responsibilitytoprotect.org/ICRtoPGAd Debate.pdf>.

44. J. Ruggie, “Business and Human Rights: Mapping International Standards of Responsibility and Accountability for Corporate Acts,” UN Document A/HRC/4/035 (February 9, 2007), with four addenda (2007).

to find ways to integrate climate concerns into understandings and responses to more-conventional threats, so these responses contribute to peacebuilding and the economic well-being and freedoms (see Sen⁴⁵).

Climate change

Climate change, distinct from interannual changes in weather patterns, refers to the long-term trends and processes in weather change reflected in hotter temperatures (“global warming”) and more-severe weather patterns. Conditions are most intensively studied and authoritatively reported to policymakers by the Intergovernmental Panel on Climate Change, a joint scientific effort of the UN Environment Program and the World Meteorological Organization established in 1989 in the wake of the Brundtland Report.⁴⁶ These changes are evidenced by more-destructive storms, particularly those involving battering of land masses and human habitations with water from wind-blown rains and wind-swept seas, and also, in some regions, more-widespread, more-frequent, multiyear, and more-destructive droughts.

Climate change is increasingly referred to as a “security threat” associated with political destabilization, which undermines state capacity to cope in response to severe weather, flooding, drought and land degradation, or other climate-related changes. Some historical literature includes references to previous long-term climate cycles involving shifts in the winds and the rains, which are known to have occurred in antiquity, and to have brought with them environmental, economic, social, and political disruptions (e.g., Issar⁴⁷). A good question for interdisciplinary investigation: What are the lessons such historical findings of climate change have to impart regarding political destabilization or adaptations responding to changes in weather, water, and land-use?

Causal connections

Natural and cultural (social, political, economic) factors in interaction are clearly indicated in any causal pathway involving human experience of climate change and conflict. Yet CCCC discourse shows a preference for the former over the latter, as if response to natural disasters and forces were somehow easier to countenance, and to mobilize around, than political disasters, which historically

45. Amartya Sen, *Development as Freedom* (New York: Alfred Knopf, 1999).

46. World Commission on Environment and Development (WCED), “Our Common Future” (1987): www.un-documents.net/wced-ocf.htm.

47. A. Issar, *Water Shall Flow From the Rock: Hydrogeology and Climate in the Lands of the Bible* (New York: Springer Verlag, 1990).

have been equally present in past epochs of momentous and calamitous change. As will be seen below in the discussion of substantive issues, such as desertification, and in case studies, such as Darfur, Sudan, climate stressors in SSA have consistently been implicated in conflictual outcomes where poor governance, lack of democracy, violent disregard of human rights, and other political and management factors exist. Yet for political reasons, it may be more difficult to describe and attribute causation to human-led factors, particularly where climate change becomes an excuse for inaction or an explanation for failure tied to disastrous policies. And for intellectual reasons, people may prefer the “simpler” and more easily measurable climate change algorithms and explanations over the far more complicated analyses that involve complex political intrigue and technical-environmental mismanagement.

Beyond such natural and political factors in climate change related challenges, climate change is itself considered to be one of the major drivers of global change. In this context, *drivers* (“meta-factors”) refer to key underlying trends shaping global change, including political-economic globalization and climate change, demographic factors (population growth, urbanization, and migration), global inequalities (including debt, as this influences occupational and national economic development choices), epidemic disease, and information and communications technologies. Such drivers can be viewed as subject to human “agency” and social-political-cultural manipulation, but also as self-organizing systems, with their own dynamics. (A good statement about out-of-control food systems, following their own dynamics, is described compellingly by journalist Paul Roberts.⁴⁸) Whereas these forces tend to be viewed as external drivers, the humanitarian-response system has its own internal drivers, which include institutional structural histories, organizational cultures, political identities, and interactions, particularly as regard humanitarians’ connections to civil-society, UN, and government actors and a conventional divide between military and non-military agents and actions and non-political versus political motivations.

Environment and climate change are new security threats and drivers shaping global change

Climate change is increasingly conceptualized as a chief factor that, in combination with the other drivers, is expected to produce large effects in the coming decades (summarized in Khan and Najam⁴⁹). This framing is a sequel to the “sustainability” framework that entered development thinking 20 years ago

48. Paul Roberts, *The End of Food* (NY: Houghton Mifflin, 2008).

49. Shanza Khan and Adil Najam, “The Future of Globalization and Its Humanitarian Impacts,” FIC Humanitarian Horizons Project paper, Tufts University (November 2009): <https://wikis.uit.tufts.edu/confluence/display/FIC/The+Future+of+Globalization+and+its+Humanitarian+Impacts>.

(see the Brundtland Report⁵⁰) and an even earlier (fear of) famine literature, which predicted gloom, doom, and devastation as the end result of unbridled population growth and its impact on nonrenewable environmental resources (e.g., Paddock and Paddock⁵¹), coupled with runaway ills of exploitative and rapacious capitalism (e.g., Meadows, Meadows, Randers, and Behrens⁵²). These anticipations of “Famine!” and “Limits to Growth” were not so much forecasts as wake-up calls, imploring attentiveness to the dangers of environmental unsustainability and soliciting changes in national policies and people’s behaviors (see, e.g., Lappé and Collins⁵³).

Drawing on all these perspectives, environmentalist Jessica Mathews provided a touchstone for the sustainable development discourse in the United States.⁵⁴ Her challenge was followed by Canadian researcher Homer-Dixon’s “resource scarcities lead to conflict” theoretical and case studies.⁵⁵ In the 1990s, this was followed up by debates over the “identity” versus “resource-scarcity” causes of conflict⁵⁶ and additional work on ethnic violence due to *Horizontal Inequalities and Conflict*.⁵⁷ A World Bank team, modeling underlying causes as “need, greed, and creed,” concluded that primary resource (petroleum, minerals) abundance, leading to competition for control over key sources of wealth, manifest as greed, trumped both scarcity (poverty, need, deprivation) and political-identity factors as cause of conflict.⁵⁸ Because these case studies featured correlations of conflict-causal factor clusters, but not careful histories, several political scientists soon after investigated the timing and sequencing of such factors in country case studies, including some that will be featured later here (see Arnson and Zartman⁵⁹; Kahl⁶⁰; Brauch⁶¹; and Dalby⁶²). These comparative, historical

50. WCED, “Our Common Future” (1987).

51. William Paddock and Paul Paddock, *Famine 1975! America’s Decision: Who Will Survive* (Boston: Little Brown, 1967).

52. D.H. Meadows, et al., *The Limits to Growth: A Report for the Club of Rome’s Project on the Predicament of Mankind* (New York: New American Library, 1972).

53. Frances M. Lappé and Joseph Collins, *Food First: Beyond the Myth of Scarcity* (New York: Ballantine Books, 1977).

54. Jessica Mathews, “Redefining Security,” *Foreign Affairs* 68:2 (1989): 162.

55. Homer-Dixon, *Environment, Scarcity, and Violence* (1999).

56. Ted Gurr, *Minorities at Risk: A Global View of Ethnopolitical Conflicts* (Washington D.C.: U.S. Institute of Peace Press 1993).

57. Frances Stewart, ed., *Horizontal Inequalities and Conflict: Understanding Group Violence in Multi-Ethnic Societies* (NY: Palgrave, 2008).

58. Paul Collier, et al., “Breaking the Conflict Trap: Civil War and Development Policy,” World Bank (2003).

59. Cynthia J. Arnson and I. William Zartman, eds., *Rethinking the Economics of War: The Intersection of Need, Creed, and Greed*. (Washington D.C.: The Woodrow Wilson Center Press, 2005).

60. Colin Kahl, *States, Scarcity, and Civil Strife in the Developing World* (Princeton, New Jersey: Princeton University Press, 2006).

61. Brauch, “Conceptualizing the Environmental Dimension of Human Security in the UN” (2008).

62. S. Dalby, “Environmental Change” (2008).

descriptive, and modeling exercises draw together both “human security” and national security perspectives, attentive to individual human consequences and response mechanisms, as well as political consequences for states, which respond to threats to state sovereignty. Combining factors of physical protection, rights, and development, they contribute to the “humanization of security” and the “securitization” of development and humanitarian enterprise. They also have motivated new “futures” research methods that study climate dynamics and ecological, political, and human impacts at multiple geographic and temporal scales and at multiple social and political levels of address.

Futures research, scenario building, and hazardscapes

Scenario building has become a major tool of futures research and projections, both by those who conceptualize with numbers and those who conceptualize with words. Using carefully structured exercises, experts construct possible hazardscapes, which represent more- or less-promising or menacing futures for humanity, based on selection and interpretations of major drivers of global change and particular actions taken by agents of change at particular times in the projected historical process.

Hazardscape exercises provide a quick way to talk about the bricks and mortar of scenario building in futures research, which aims to predict and prepare for the predictable and unpredictable in humanitarian assistance. These exercises may involve purely verbal logics, tracing causal relationships and feedback loops, or linear programming exercises, involving single or clustered causal factors.

Humanitarian NGOs methodologically use “scenario planning” to configure future “global hazardscapes” that model interactions among the principal “drivers” of global change, which conceptually include environment, urbanization, migration, and disease (especially HIV/ AIDS) in the context of political-economic globalization (see, e.g., FIC⁶³). A large question is how interactions among these drivers in particular places will affect political and environmental outcomes, given influential historical ecological and political conditions and enlarging awareness and response efforts, conventionally labeled “mitigation,” “adaptation,” and “resilience,” but effectively combining two or three at time.

63. FIC, “Ambiguity and Change: Humanitarian NGOs Prepare for the Future,” World Vision, Care, Save US, Mercy Corps, Oxfam America, Oxfam Great Britain, International Rescue Committee, and Catholic Relief Services (2004).

Awareness and response mechanisms: Mitigation, adaptation, resilience

Climate change discourse urges interventions divided into three overlapping categories – mitigation (prevention), adaptation (coping mechanisms), and resilience (restoration) – which also somewhat blur humanitarian (disaster) and development-aid distinctions. As a case in point, participants in a climate change workshop on “adaptation” hosted by the International Food Policy Research Institute (IFPRI)⁶⁴ shared lessons from “mitigation” projects that reduce water usage in agriculture, pollution in fisheries, exposure to storm damage in housing, and so on, connecting “adaptation” to “mitigation” in adaptation-mitigation strategies.

Official definitions of “resilience” within the UN system’s responses to the challenge of more severe weather events associated with climate change draw overlap between preventive (preparedness) and response functions, as well as between humanitarian and development actions. Based on prior work, the Hyogo Framework for Action on disaster risk reduction (DRR), for example, notes, “An integrated, multi-hazard approach to disaster risk reduction should be factored into policies, planning, and programming related to sustainable development, relief, rehabilitation, and recovery activities in post-disaster and post-conflict situations in disaster-prone countries.” It defines “resilience” as “the capacity of a system, community, or society potentially exposed to hazards to adapt by resisting or changing to reach and maintain an acceptable level of functioning and structure.”⁶⁵

Oxfam America’s DRR agenda favors pre-disaster investments in disaster risk management and reductions in vulnerability, which is another way of talking about “adaptation” and future “resilience.” Concepts and definitions of “resilience” regularly refer to the self-organizing and learning capacities of social and institutional systems, especially “capacity for learning from past disasters for better future protection and to improve risk reduction measures.”⁶⁶ There needs to be more documentation on such “success” stories.

Resilience, in the context of climate change, anticipates recovery and return to a new normal, not necessarily the same as the previous state. In addition to “self-organizing,” humanitarian ideas of resilience also refer to renewed and

64. IFPRI, “Climate Change, Adaptation, and Poverty,” panel featuring Mahabub Hossain, Executive Director, Bangladesh Rural Advancement Committee (Bangladesh); Raul Montemayor, General Secretary, Federation of Free Farmers Cooperatives (Philippines); Camilla Toulmin, Director, International Institute for Environment and Development (United Kingdom). Washington, D.C. (June 25, 2009): www.ifpri.org/event/climate-change-adaptation-and-poverty.

65. UN International Strategy for Disaster Reduction (UNISDR), “Hyogo Framework for Action, 2005–2015: Building the Resilience of Nations and Communities to Disasters” (2005): www.unisdr.org/eng/hfa/docs/Hyogo-framework-for-action-english.pdf, footnote 7.

66. Ibid, footnote 7.

improved capacities for self-reliance, which allow countries and communities to cope (prevent, respond, rebound to environmental change) without need to appeal to external sources of assistance. Resilient self-organizing, self-reliant community and national response systems are the ultimate goal of most forward-looking efforts to address climate change, but such achievements are not immediate on humanitarian horizons.

All three dimensions raise questions about the most effective ways for outsiders and insiders to intervene (or invest) at multiple social, political, and institutional levels to remove threats and prevent violent conflicts. Many favor contributions to poverty-reduction plans. They argue that developed country assistance that can help developing countries relieve poverty may be more important than contributions to targeted funds, such as those addressing specific public health threats, in helping countries build internal capacity to respond to threats, including timely community response and national resilience in the context of climate change (e.g., Ogura⁶⁷).

Others insist that the most important interventions must be to build capacities (knowledge for action) at the local level (e.g., Smith and Vivekenanda⁶⁸). This is because behaviors at the grassroots influence energy consumption, land and water use, and all the other “mitigation” as well as “adaptation” and “resiliency” factors. It is also at the grassroots that people either accept or actively demand improvements in their standards of living that are affected by climate change scenarios and join or oppose violent conflicts.

These various future “scapes” suggest multiple levels of address and agency: individual, household, community, nation, world, and cross-cutting networks.

Globalization

Globalization presents its own set of drivers, including, most importantly, information and communications technology and other cutting-edge technologies (bio-, nano-) and movements of all kind of capital (e.g., financial, technological, human), based on market values and increasingly well-informed trade calculations (markets and trade are usually treated as separate drivers). Experts also describe demographic drivers, especially population growth relative to resource bases in particular places, increasing concentration, and urbanization producing more-intense levels of social interaction (perhaps favoring more social conflict and requirements for mediating institutions) and, most importantly, larger-scale population mobility, emigration, and immigration, regulated or not

67. K. Ogura, “A Pacific Asian Perspective: Coping with Threats to Human Security,” *The New Challenges to International, National, and Human Security Policy*. (Washington D.C.: The Trilateral Papers, 2004): 58.

68. Smith and Vivekenanda, “A Climate of Conflict” (2007).

by international and national rules and influenced by national-through-local practices.

Whether globalization makes the world more peaceful and food secure – or its opposite – depends on the perspective and conditions of the nations under study (see review of terminologies, evidence, and issues in Messer and Cohen,⁶⁹ which discusses food, globalization, and conflict). Obviously, regional, national, and subnational environmental and economic situations, and political-economic history and structural conditions, are important; for example, Singapore or Taiwan produces a different sensibility regarding the costs and benefits of globalization than the Democratic Republic of Congo (DRC) or Angola, although even in these latter cases, some international human rights and global peace institutions play a role in moving their situations more toward peace and away from violence. (For a review of this literature see: Schneider, Barbieri, and Gleditsch and Gartzke and Li.⁷⁰) Historical ethnic tensions can also pit a majority against a wealthy minority. Violent conflict can erupt especially where economic conditions for the majority deteriorate and their leaders are looking for scapegoats, as has characterized violence against ethnic Chinese in the Philippines, a pattern that could be replicated elsewhere (see Chua⁷¹).

Globalization scenarios also raise questions of how the private sector might be involved in peacebuilding, not just in the form of “private” versus government or NGOs, and private versus official “aid” and security operations, but also in active peacebuilding through building livelihood and business skills. Some suggest businesses might be strategic partners involved in all aspects of design, implementation, and evaluation of conflict-preventive operations. Business might also get involved in construction of local business capacities in post-conflict zones or provide advisory services to corporations or trusts that would fund operations in post-conflict situations (e.g., Ruggie⁷²).

In a context where most globalization analysts conclude that globalization reduces state sovereignty by raising the profile of global, regional, and transnational agents, climate and conflict professionals share concerns that fragile (or “failed”) states are less likely to implement policies that protect the

69. E. Messer, M.J. Cohen, and J. D’Costa, “Food From Peace: Breaking the Links Between Conflict and Hunger,” Food, Agriculture, and the Environment Discussion Paper No. 24, IFPRI (1998).

70. G. Schneider, K. Barbieri, and N.P. Gleditsch, “Does Globalization Contribute to Peace?” in *Globalization and Armed Conflict*, eds. G. Schneider, K. Barbieri, and Nils Petter Gleditsch. (Lanham, Maryland: Rowman and Littlefield Publishers, 2003): 3–30.

E. Gartzke and Q. Li, “How Globalization Can Reduce International Conflict,” in *ibid.*: 123–164.

71. Amy Chua, *World on Fire: How Exporting Free Market Democracy Breeds Ethnic Hatred and Global Instability* (New York: Doubleday, 2003).

72. Ruggie, “Business and Human Rights” (2007).

environment and human rights and promote peace. They pose a stumbling block to environmental protection, efforts at mitigation, conflict prevention, and peace-promotion activities, which depend on states to negotiate and then fulfill conditions.

Some human rights advocates frame the requirements in terms of a need for new language in negotiation, with emphasis on “respect” and “protect,” not just “fulfill” conditions of basic human rights and environmental protection (see e.g., Hartmann, Subramaniam, and Zerner⁷³). But a more pertinent language addressing CCCC might refer to scale, whether environmental actions should focus more on subnational, community, or nongovernmental capacities to increase environmental awareness and response – and forge cooperative agreements that prevent violent conflict.

Globalization’s drivers may also be supranational, regional, and contextual, including cross-border political, geographic, ethnic, and religious currents that are sometimes but not necessarily global. Historical political-economic structures and linkages, and also particular leadership styles, are partial determinants of onset and escalation of conflict in particular settings, such as Sudan’s civil wars. In a world of climate change, analysts must consider what the neighborhood comparative advantages are for peacebuilding as opposed to “contagious conflict,” where having neighboring states in conflict poses a powerful risk factor, identified in statistical studies of conflict determinants (e.g., K.S. Gleditsch⁷⁴), and also anecdotally, as people with arms, themselves fleeing violence, spill over state boundaries, attacking and uprooting others.

All these technological, economic, political, and demographic factors – despite general ideas that globalization is associated with deregulation and cultural homogenization in related processes – produce world outlooks where global policies are another major driver of change. International-relations and political-science analyses, privileging the analysis of international institutions, transnational enterprise, and multinational NGOs, predominantly view such processes as subverting national sovereignty. But such views tend to underplay the very important role that nations play in implementing international policies. These self-referencing studies also slip seamlessly from descriptions of Western globalization processes into universals, without adequately accounting for the very different “sovereign” responses of large and increasingly influential nations, such as China, and persistently influential groupings, such as OPEC, which can

73. B. Hartmann, B. Subramaniam, and C. Zerner, eds., *Making Threats: Biofears and Environmental Anxieties*. (Lanham, Maryland: Rowman and Littlefield, 2005).

74. K.S. Gleditsch, “Transnational Dimensions of Civil War,” *Journal of Peace Research* 44:3 (2007): 293.

rapidly destabilize the world economy (this literature is less critically summarized in Khan and Najil⁷⁵; see also Chua⁷⁶).

Future technology, particularly in the energy field, may well change the key agents and dynamics of “trade wars,” the national interests of which might spill over into hot political wars. Thus, the futures scenarios proposed in the US National Intelligence Council (NIC)⁷⁷ and UK Ministry of Defence Development, Concepts, and Doctrine Center (DCDC)⁷⁸ accounts do raise these considerations in their framings, and certain scenarios continue to see nationalism as a principal driver of international conflict and political instability, both of which are deterrents to universal globalization in the markets and culture (see summaries in Borton⁷⁹). Such scenarios proceed in the context where climate change is likely to exacerbate energy and water needs or issues, and thus contribute to conflict potential.⁸⁰

Social scale

Individuals, individual agency

Individuals are the main subject(s) of media “human interest” stories, which trace the decisions of individuals in response to disaster (climate change, war) situations (e.g., Friedman⁸¹). Now a growing literature, replete with post-modern academic language, uses real lives to report the substantive basis for individual decision making, based on understanding of their social structures and personal situations and options. Below, discussion of individual agency, social ties, and possibilities in different contexts connects Smith and Vivekenanda’s emphasis on

75. Khan and Najam, “The Future of Globalization and Its Humanitarian Impacts” (2009).

76. Chua, *World on Fire* (2003).

77. US NIC, “Global Trends 2025: A Transformed World” (2008).

78. UK Ministry of Defence Development, Concepts, and Doctrine Center (UK DCDC), “Defence in a Changing Climate” (2010): www.mod.uk/NR/rdonlyres/378271EE-0F39-4DF2-8FBB-E56E42733AD6/0/DefenceinaChangingClimateFINAL.pdf.

79. Borton, “What Will the Humanitarian System Look Like in 15-20 Years?” (2009).

80. In one NIC (2008) scenario, possible future political alliances between Russia and China are based on sharing alternative (clean) energy and technology resources, whereas in another scenario, elevated national sovereign state competition for such essential energy and water resources provokes hot war and the break-up of a Brazil-Russia-India-China alliance. UK DCDC (nd) identifies climate change impacts through too much water that will reduce cultivable and habitable land, increase land area vulnerable to tropical diseases, and increase exposure to extreme weather events.

81. Lisa Friedman, “Bangladesh: Where the Climate Exodus Begins,” *Environment & Energy Daily* (2009): www.eenews.net/special_reports/bangladesh/.

the need for grassroots education leading to appropriate climate- and conflict-sensitive actions.⁸²

Household food and livelihood securities

Household-level analysis considers how individuals survive and rebound (or not) in elemental social units. Also, what kinds of community (internal) and national or international assistance help them weather the storm (appropriate analogy in this situation). This level of analysis includes not only “coping mechanisms” (although these are important), but how leadership and authority systems, through their capacities to regulate and govern resource extraction and distribution in disaster situations, make adaptation and resilience possible.

Examples come from the journal *Disasters* and a larger literature on coping strategies, which explore which disaster response mechanisms are likely to work in what kinds of “climate change” situations, and which are more likely to be overwhelmed and prevent ever returning to prior livelihood strategies. A classic review by Colson, “In Good Years and Bad,” considers a series of African and Asian examples.⁸³ Raymond Firth and his intellectual progeny considered how Tikopians, under wise and respected traditional leadership, weathered cyclones and recovered in the 1950s in the South Pacific⁸⁴ (although after 2002 Cyclone Zoe, they relied on the kindness of international shipping interests to repair a potentially fatal breach in their island that threatened their sweet water lagoon). Such ethnographic examples of “coping strategies” are relevant to planning response in the small Pacific Island societies often singled out as potential big losers in global warming scenarios hazarding rising sea levels and more frequent and severe storms.

Significantly, in none of these small-scale societies do observers describe politically violent outcomes. Traditional authorities direct disaster prevention and response strategies, increasingly with outsider assistance. But the 2000s are another millennium, when global labor migrations and ready access to arms make it valid to ask whether the outcomes might be violent today, with the sense of frustration, recent experiences of civil wars on or within borders, and the ever-present threats of men (possibly also women) with guns.

82. Smith and Vivekenanda, “A Climate of Conflict” (2007).

83. Elizabeth Colson, “In Good Years and Bad: Food Strategies of Self-Reliant Societies,” *Journal of Anthropological Research* 35 (1979): 18.

84. Raymond Firth, *We the Tikopia: Kinship in Primitive Polynesia* (London: Allen and Unwin, 1936).

Raymond Firth, *Social Change in Tikopia*, (Routledge Library Editions, 2004).

Community

Community water and food strategies are often neglected in statistical descriptions of water availability per capita or food security at the household level. Development interventions are always “community” located, and NGO projects are explicitly “community-based.” Yet project motivations differ, as will conflict and climate mitigation efforts, regarding the definitions and boundaries of social groups they will work with, that is, which local collectivities are the focus for investment (of all kinds of capital) and setting for resilience, where people confront the costs of capitalism as well as climate change and political conflict. A central question in the conceptualization of CCCC response is institutional, namely, what kinds of indigenous (local cultural), state-sponsored (local governmental, trade union), or private-sector (transnational corporation – TNC – or for-profit corporate enterprise, or international or local NGO) constructed social institutions will be the partners or prime movers in community-based mitigation, adaptation, resilience. Military and paramilitary social constructions are also well-known (see discussion of Colombia, below). All seek alliances, sometimes identity with or as the “community-based organizations” that are central to raising awareness and local response.

State (national governments)

States (national governments) refer to internationally recognized sovereign political units that participate in interstate treaties and international agency processes. The term “nations” can also refer to subnational political-identity groups, the members of which have places of origin or political locations that may cross modern state boundaries. Human rights advocates sometimes refer to “stateless nations” and “multi-national states” to acknowledge these political difficulties, where multiple groups claim sovereignty and seek autonomous or independent political recognition and control over resources. Their claims are relevant to discussions of climate and conflict because these political-identity units are usually the locus of violence surrounding conflicting claims to land, water, and other resources, and also because they may become the locus for building climate-change-awareness and climate-change-response efforts.

Region

Regions are the international political-geographic units of record for purposes of descriptive world statistics and intergovernmental political processes. Each region has developed its own sub-global political organizations, which address governance, economic, and social-cultural issues. These units are particularly important in addressing resource development and crises; they also negotiate

conflicts and donate and manage resources connected to environmental protection.

World

International, intergovernmental, global, transnational, and world all refer to aggregate-level institutions and actions. The UN designates official intergovernmental assemblies, agencies, and actions of governments, which in most circumstances also involve NGOs that have official “consultative” status. Intergovernmental organizations (IGOs) refer to both these official UN institutions and to international financial institutions, including the World Bank, other multilateral development banks, and the International Monetary Fund. The World Trade Organization is a spin-off from the General Agreement on Tariffs and Trade. These official IGOs negotiate treaties and tariffs and official political-economic policies. Additional intergovernmental agents involved in global responses to climate change include the Consultative Group on International Agricultural Research, the International Organization for Migration (IOM), and the multiple Red Cross and Red Crescent societies.

NGOs include international nongovernmental organizations (INGOs), national NGOs, and community-based organizations (CBOs), which are linked increasingly into transnational networks for advocacy and development work. TNCs, also known as multinational corporations, are private-sector production and trade organizations. Whereas official political-economic institutions negotiate the official terms of agreement that bind states to terms of treaties and trade, NGOs have established their own parallel set of voluntary agreements that guide behaviors in particular areas, including environmental protection, humanitarian action, and peace. These different terms of address are sometimes overlapping or, at worst, confusing as, for example, governments set human rights guidelines for judging the behaviors of official national agencies but designate all other agencies, including official UN agencies such as the UN Children’s Fund (UNICEF), the World Health Organization, or the Food and Agriculture Organization which operate within their borders, as nongovernmental. Analogously, the UN officially designates all non-state or interstate agents and agencies as NGOs, no matter whether they are INGOs, CBOs, or TNCs. Different regions of the world also experience cross-border and subnational violence involving official governmental and intergovernmental regional military and also “rogue” paramilitary players. These multiple categories are relevant to negotiation of treaties and guidelines for behavior in the face of climate change and its conflict implications.

Substantive factors in climate change

Water and land-use issues

Water issues – including *water scarcity, drought, desertification, flooding, and land degradation* – are all concepts, measurements, and determinations of status that, like famines, have cultural-political dimensions. Consumption needs for essential drinking water, hygiene and sanitation, agriculture, and other uses comprise one side of the “water” sufficiency or insufficiency calculation; sources of availability from conventional, recycled, or desalinated sources comprise the other. These two complementary sides of the water equation are studied through models of the hydrological cycle, water markets, and qualitative description of social and cultural water-use values and behaviors. They are also evaluated in terms of crop and livestock “needs” and their more or less efficient uptake of water for production and growth. Increasingly, access to water is conceptualized and negotiated as a legal, political, and cultural right, and patterns of water utilization are judged according to norms of environmental and social justice. Environmental parameters, especially under scenarios of climate change, add additional concerns about sustainability, competition, and conflict.

Hydrological cycles and their management

Perceptions and measurement of water scarcity begin with attention to the hydrological cycle, which describes the flow of water, beginning with natural precipitation and through runoff and utilization. “Green water flow” traces the cycling of this rainfall water through agricultural systems, especially plants, and atmospheric losses of water in this process. “Blue water flow” traces the cycling of surface water, 70 percent of which is used in irrigation agriculture. Two-thirds of all water that falls over the earth’s land masses is consumed in plant production, including farms, grasslands, and forests. Any change in plant cover changes runoff and water availability, which is why climate change specialists are concerned not only about changing precipitation but also changing land-use patterns. Agricultural scientists continually expand and refine their calculations of water “needs” for nutritionally adequate food production to feed everyone an adequate diet. They propose new sources of irrigation, greater water efficiencies (effecting more crop per drop), and horizontal expansion of blue water flow into agricultural production. Water needs for human consumption, reciprocally, depend what human beings are eating and doing, how efficiently they access “virtual water” contained in foodstuffs, and also how sustainably they manage

their sanitation systems and recreational places to conserve and protect water supplies (see e.g., Falkenmark for further explication of these water terms⁸⁵).

Governments have little or no ability to control precipitation, but they can manage interannual variations in ways that protect lives and livelihoods with more or less equity, and so avert conflict. They can enhance water supplies through investments in expert hydrological engineering to develop sustainable water supplies through selective water pricing that encourages thrift without deprivation and exclusion. Scientifically sound regulations and transparent rule of law can also protect ground cover, including forests and biodiversity, and effectively promote water-sparing agricultural methods and crop choices.

Awareness of sustainable environmental practices and climate change, and citizen capacities and responsibilities to adopt “green” behaviors that can minimize damage to waterways and watersheds, also enter into NGO and CBO behaviors, and household and individual agency. In developed countries, individuals choosing a “green” water-sparing lifestyle, by adoption of water-sparing waste disposal, or deciding to purchase certified materials from “sustainable” forests or industries, are critical to meeting challenges of climate change and transforming conflict potential. In developing countries, people are also participating by choosing to grow more water-sparing crops, joining civil-society organizations and movements that will protect native crops, waterways, and forests, inside and outside of NGO and other social-mobilization channels.

Water scarcity, drought, and desertification

In the context of these understandings, whether water proves “scarce” depends on who needs or desires it, how water resources are managed and used, and who controls and distributes allocations – whether equitably and sustainably – or not. Water shortages in the Bolivian city of Cochabamba, for example, provoked political demonstrations about access and the terms of private-corporate versus people’s-democratic control over the water management process, not absolute water shortages or the need for management per se (see Olivera⁸⁶). Sustainable water availability also depends on land use, including protection of forests and grasslands and especially crop choices. These land-use activities can be water-sparing and help protect water retention in soils or uptake water disproportionately to their contribution to environmental resources and livelihoods. Many worry that water for agriculture and human consumption is becoming scarcer in parts of South Africa due to water uptake by unwelcome “invasive species,” but “restoration ecologists” challenge any concept of absolute

85. M. Falkenmark, “Water Cycle and People,” Stockholm International Water Institute (2004). www.mwp.org/proceedings/dokument/ld_20.pdf.

86. O. Olivera, *Cochabamba! Water War in Bolivia* (Cambridge, Massachusetts: South End Press, 2004).

scarcity; they show that soil and water retention are relative to plant cover and management practices, and that growing shortages can be successfully managed (see Koenig⁸⁷).

Rainfall and its interannual variability obviously are critical to agricultural choices and livelihoods, but so are government policies that construct water allocation systems and encourage protection of watersheds and coastal waterways. Planners need access to better local microgeographic information about inter-annual variability in moisture regimes and their impacts in particular places, but they also need to take into account what government regulation can do to reduce threats to water supplies, as well as to inequitable access, which can increase conflict (violence) potential. In the Darfur, Sudan, case study below, government inaction, intentionally and unintentionally, has resulted in reduced forest cover, land degradation, and water scarcities. Additionally, government does nothing to reduce attacks by pastoralists on farmers, as the former desire moisture and vegetation for their flocks, and they loot as added livelihoods.

These violent land conflicts also have additional implications for water management, as attackers cut down trees as hostile acts in the communities they pillage to make sure that former residents do not return, and refugees in flight or in temporary camps deforest the areas around them to get firewood and charcoal for their own fuel use or for sale. Some also allege that marauders poison wells, which also prevents return of farmers. True, rainfall patterns are shifting as a result of climate change, but unregulated destructive conflict and deforestation are contributors, which government could take effective action to control but does not. In addition, peace could allow a return to normal agricultural and market livelihoods, which have been disrupted and diverted by violence and thuggery. Government investments in water and transport infrastructure, as well as safety, could transform this picture of violence and hopelessness to the possibility of calm development. Alternatives to land-based livelihoods must obviously also be part of the picture in climate-stressed areas, which are already consuming imported food as “virtual water” that replaces local sources, but nutritional resources must also be sustainable, reliable, and affordable, outcomes that depend on secure market and livelihood structures.

In this case, a model for others, climate change that brings drought, desertification, and deforestation showcases the political causes of destructive upheaval, violence, and human suffering and suggests political solutions that are sensitive to ecological conditions, opportunities, and options.

Water for sanitation and hygiene is also a flexible quantity. Hygienic use of water in sanitation and its recycling are likewise relevant to calculations of water needs

87. R. Koenig, “Unleashing an Army to Repair Alien-Ravaged Ecosystems,” *Science* 325 (2009): 562.

and shortages. For example, water engineer Peter Rogers finds that one out of six human beings do not have access to sufficient clean water, which he estimates to be 2000 cubic meters per person per year. They suffer from “not enough water,” but in his expert interpretation, both causes and solutions lie mainly in the political realm, where better policies can fix broken infrastructures, and present political-economic incentives for greater efficiencies on everyone’s part in food, other agricultural production, and water use for personal hygiene. In a hotter, drier world, water-sparing crops (including trees) and plumbing (including good-functioning dry-compost toilets) could make a huge difference.⁸⁸ Whether one thinks of water stress as leading to “threat of violence” or surmountable technological challenges, innovation and intentional human agency seem to depend at least in part on disciplinary perspective, with engineers and economists confident that they can get the technology and prices right, whereas political and cultural experts are less certain or optimistic about politics and culture.

Analogously, “drought” is defined as failure of seasonal precipitation, which produces extreme water scarcity that threatens water supplies for agriculture, hygiene, and other essential purposes. However, the impact of drought on water scarcity depends on other ecological and political factors, including management factors.

Drought conditions may or may not be declared as an emergency situation, which politically sets in motion water-conservation and emergency-response measures that are resource-intensive, particularly in the developing world, where drought is often associated with food emergencies. Precipitation failure, however, only becomes a primary cause of severe food insecurity, which sets into motion government appeals for emergency food where market and humanitarian response capacities are not in place.

Declaration of drought as a cause of water and food emergency depends on prevailing water and food politics: In Israel, where farmers fight politically for lower-cost water allocations, a declaration of drought has significant political implications for water distributions, which are always based on politics as well as ecology.⁸⁹ Although Israel, like surrounding countries, suffers frequent yearly and multiyear spells of severely dry weather, since its war for independence the population has not suffered acute food shortages leading to widespread population movements in search of food, or elevation in hunger-related deaths. Nor, by such definition, is drought-related “famine” a year-to-year concern in its

88. P. Rogers, “Facing the Freshwater Crisis,” *Scientific American* 299, 2 (2008): 46-53.

89. S. Lees, “Kicking Off the *Kaiko*: Instability, Opportunism, and Crisis in Ecological Anthropology,” in *Ecology and the Sacred: Engaging the Anthropology of Roy A. Rappaport*, ed. E. Messer and M. Lambek (Ann Arbor, Michigan: University of Michigan Press, 2001): 41-63.

Middle Eastern neighborhood, which, like Israel, has access to “virtual water” in the form of food imports to meet basic food needs and to avoid food and water wars (see Allan⁹⁰). Moreover, agriculture supports a continually declining number of household livelihoods, as people shift to non-agricultural, less water-dependent sources of income. By contrast, the possibility of *famine* conditions (see, e.g., Robson⁹¹), linked to diminishing rains, continues to threaten especially conflict-prone African nations, which lately have suffered increasing frequency and severity of drought and acute water shortages due to failures of natural precipitation, combined with ineffective political and technical management of water and food resources.

Another factor contributing to agricultural failures and pastoral livelihood deterioration is “desertification,” which refers to land degradation and desiccation associated with failure of rains, loss of vegetation, and breakdown in soil structure. All can be caused by climate change, but also by overuse or abuse and poor management of terrains, especially under conditions of moisture stress. Although it is tempting to view desertification as a natural process and a stressor tied to climate change, political analysts note how oppressive governments intentionally have used the language (and cry!) of desertification to divert attention from their own corrupt and oppressive regimes and mismanagement of crucial resources (see critical review in Benjaminson⁹²). Various micro-perspectives on African famine and food systems also have considered conflicting definitions, political usages of the term “desertification,” and the roles of poor government management policies in undermining the water and soils resource base (see essays in Huss-Ashmore and Katz⁹³, especially Mabbutt⁹⁴ and Spooner⁹⁵).⁹⁶ All these sources attest that *it is inaccurate to conclude that water scarcity, drought, desertification, or climate change cause political instability and rebellions; it is the political context that shapes such conflicts and natural resource degradation.*

Similar political-ecological arguments can be made for other land-and-water use terms of reference.

90. J.A. Allan, *The Middle East Water Question: Hydropolitics and the Global Economy*. (London: I B Tauris, 2001).

91. John Robson, ed., *Famine: Its Causes, Effects, and Management* (The Netherlands: Gordon and Breach, 1981).

92. Benjaminson, “Does Supply-Induced Scarcity Drive Conflicts in the African Sahel?” (2008).

93. R. Huss-Ashmore and S. Katz, eds., *African Food Systems in Crisis, Part One: Microperspectives* (Langhorne, Pennsylvania: Gordon and Breach, 1989).

94. J.A. Mabbutt, “1989 Desertification,” in Huss-Ashmore and Katz (1989): 73. See note 93.

95. B. Spooner, “Desertification: The Historical Significance,” in Huss-Ashmore and Katz (1989): 111–162. See note 93.

96. The introductory chapters to this volume, authored mainly by anthropologists, unpack the complexity of the use of “desertification” terms.

Water and land use as conflict factors

In 2009, journalist Wendy Barnaby published an article in the journal *Nature* describing her unsuccessful quest to document the ways water conflicts had contributed to warfare in recent or ancient history. She used as a principal source the findings of Peter Gleick, President of the Pacific Institute for Studies in Development, Environment, and Security in Oakland, California. For sure, Gleick's "Water Conflict Chronology" shows that only a small minority of conflicts over access to water sources actually lead to interstate warfare. Water disputes at the state level tend to resolve in international treaty agreements or mediation by a third party, which favor cooperation over conflict. At the subnational level, however, they may result in incidental or more-organized violence, which requires attention in local conflict-resolution settings or at higher levels to quell persistence or escalation. Thus, one's conclusions depend on what factors and connections one counts.

Additionally, the chronology indicates that more often water is a conflict factor, used as a tool in negotiation or escalation of political disputes, which may in some cases turn violent. Gleick's updated "Water Conflict Chronology" for the period in question (1974–2008) is, in fact, more provocative than anyone's simple count (or dismissal of the conflict connection) can reveal, as the chronology's columns, categorizing "basis of conflict," violence, and description, indicate how water figures into conflict dynamics, whether or not such disputes began with fights over water or whether the conflicts turn violent.⁹⁷ Water management technology may be an intentional or incidental target in armed violence, including tanks, pipes, pumping stations, and water purification (including desalinization) or wastewater treatment facilities. Accidental or intentional poisoning of water sources may trigger violence in long-simmering protests against pollution of water sources that threaten health and traditional water-related livelihoods in agriculture, livestock, or fisheries.

Changing land use and vegetation as sources of contestations and conflicts

Pastoralists and farmers have always fought over access to land and water for their economic livelihoods. In addition, since national independence, newly independent state governments have tampered with traditional land-use sharing practices in the interest of "development" and removed or undermined traditional dispute-resolution mechanisms in the process. Particularly along rivers that provide water for both farmers and pastoralists, disputes have heightened, as state bureaucrats play commercial politics and allow some interests to enclose what had been collective lands and restrict access to water. As a result, multiple social levels of conflict surround access to land and water

97. Peter Gleick, "Water Conflict Chronology" (2008).

livelihood resources, which are being and will be reduced further by climate change.

Darfur, Sudan, is the example most frequently cited as a case study of land-use conflict threats associated with climate change, although fact-finding missions are careful to qualify the political contexts, which they interpret to be the root causes of such violent destructions.⁹⁸

Ethiopian sources also distinguish at least three types of violent social conflict associated with land-use and water-access in what were traditionally shared farming-pastoralist land-use areas. First, state-pastoralist conflicts where government has allowed commercial interests to appropriate well-watered, former “common property” lands in the Awash Basin. Second, resultant farmer-herder conflicts that have escalated as a result of decreasing access by herders to land and water resources. Ordinarily, these involve small numbers of pastoralists who invade and burn down agricultural settlements, stealing livestock in the process. However, with increased flow of firearms (from the region’s multiple civil wars), and increasingly desperate conditions for pastoralists, such destructive acts are increasing in scale.⁹⁹

Hostilities within and between pastoralist communities by parties who compete with each other for pasture and water sources spotlights a third deadly conflict type. In some cases, wealthier (and well-armed) Afar (in the Awash Valley) and Somali (in Ogaden), who are giving up mobile pastoralism in favor of cash crop cultivation, appropriate lands close to water sources and forbid others access. This third type of livelihood transformation marks a sharp break between the old ways, which favored hospitality and communal values, and the new ways, which threaten continuities and community in the pastoralist ways of life and livelihood, including farmers who shared land and water with them.

Rahmato predicts that these changes will continue and foment increasingly violent conflicts in the region.¹⁰⁰ Climate change will contribute to these hostilities, but their root causes are also, or mainly, social and political, pointing to weak adjudication procedures and rule of law.

Indirect or secondary environmental impacts of conflicts include more deforestation, land degradation, water pollution, groundwater contamination, and unsustainable extraction. These become “resource scarcity” sources of

98. UN Environment Program (UNEP), “Environmental Degradation Triggering Tensions and Conflict in Sudan,” press release (2007): www.unep.org/Documents.Multilingual/Default.asp?DocumentID=512&ArticleID=5621&I=en.

99. D. Rahmato, “Customs in Conflict: Land Tenure Issues among Pastoralists in Ethiopia,” Forum for Social Studies, Addis Ababa (November 2007): www.dessalegn.info.et/Dess%20ETHIOPIA-%20CUSTOMS%20AND%20PASTORAL%20LAND%20ISSUES.pdf

100. Ibid.

conflict in the next round. All contribute to soil degradation and additional environmental damages.

Deforestation, which presents a barrier to vegetative checks on desertification, is associated with changing temperature and rainfall patterns, the impacts of which are magnified by climate change. But it is also a consequence of overuse of land for grazing and farming and political breakdown of environmental regulatory structures, plus war economies that deliberately cut down trees. Timber (also charcoal manufacture, brickmaking) is part of the war economy in Darfur, as it was in Sudan's prolonged civil war between the north and the south. Trees are also deliberately cut as a war tactic, helping to drive residents away and ensure that they will have no tree assets to fall back on or to claim as part of land claims, should they desire to return. Deforestation thus plays a role in the conflict cycle, connecting cause and consequence.

Changes in land-use policies, including reforestation, new water management technologies, and water-sparing crop choices, however, can also reverse damage to the resource base and help prevent conflict over scarce resources. So far unique Chinese¹⁰¹ and Indonesian¹⁰² cases suggest that carefully selected tree species communities can produce livelihood benefits for humans and healthy sustainability for ecosystems. Chinese adopting a "close-to-nature" approach of complementary tree species plantings assert, "The better mix of trees, the richer the humus and the greater the soil's capacity to retain water. Reducing runoff stabilizes not only the hydrology of the watershed but also the local climate...the ecosystems are more resistant to pests and disease."¹⁰³ Local communities in Kalimantan, Indonesia, used mixed agro-forestry projects to earn livelihoods from tree crop products, which simultaneously conserves land and plant species that protect dwindling orangutan populations. In this case, villagers sold conservation land and received tree farming land in return. On the tree farming land, they planted many species, some fast-growing, some longer term tropical species, and also intercropped cash crops like ginger, papaya, cocoa, and chilies. Locals run this NGO project, whose greenery has reported lowered air temperature in the immediate vicinity and also increased rainfall.¹⁰⁴ Such "success" vignettes suggest what is possible if locals (a) know they own or control the land or (b) access sound ecological-economic advice, that earns them multiple income streams that encourage them to invest in the sustainable management projects.

101. Richard Stone, "Nursing China's Ailing Forests Back to Health," *Science* 325 (2009): 556.

102. Dennis Normile, "Restoring a 'Biological Desert' on Borneo," *Science* 325 (2009): 557.

103. Stone, "Nursing China's Ailing Forests Back to Health" (2009).

104. Dennis Normile, "Restoring a 'Biological Desert' on Borneo" (2009).

Unfortunately, these short case summaries provide little information about the internal local social-political structures or their connections with higher levels of authority. Science and technology experts look forward to restoration ecology at the local level, with the approval and support of governments. They hope to make science relevant to poor people by establishing real incentives, which are economic, namely to make money, or political, which demonstrate the advantages of exercising local control. Local community leadership, principled rule-governed behaviors, and community solidarity, as well as community ties to larger state political apparatus, are intrinsic to such developments, which unfortunately can be undermined by conflicts, corruption, or elite capture of benefits.

Conflict and civil war also affect official agro-forestry land-use policies, which in turn affect soil structure and water retention within watersheds. *Clearly, unstable governments fighting civil wars are hard-pressed to muster the material and management resources to protect existing natural resources or to implement programs of land and forest protection or restoration ecology.*

Riparian violence

Mixing multiples of the above, many climate change researchers anticipate a rising tide of conflict associated with new and competitive water uses by potentially hostile neighboring riparians, whereas others emphasize mainly peace. Some of the conflict-potentiating damages are already evident, for example in eastern Asia. Industrialization upstream in China has led to soil erosion, deforestation, and landslides, the impacts of which are felt in the lower riparian states of Bangladesh and India. That these countries are part of a common ecosystem was made tragically clear by the flash floods that ravaged northeast India in 2000, caused by a landslide in Tibet.¹⁰⁵

The Tigris and Euphrates are sources of constant conflict and concern, as upstream riparian Turkey draws off and dams water and leaves downstream riparians (Iraq, Syria, Kurdish elements) increasingly water scarce. Those who control the Nile's headwaters in Ethiopia, Sudan, and Uganda could potentially strangle downstream (Egypt's) usage. Diversion of waters in Sudan's Jonglei canal scheme – which was supposed to rationalize water use for agriculture and industry and which would enjoy the benefits of new efficiencies, but leave out pastoralists who were accustomed to accessing their shares – was one major source of hostilities in the north-south civil war.

105. Smith and Vivekenanda, "A Climate of Conflict" (2007), citing Nimmi Kurian, "Takes Two To Solve a Water Crisis," *Indian Express* (Aug. 17, 2004): www.indianexpress.com/oldStory/53200/.

Although numerically the numbers of interstate armed conflicts that have occurred over access to shared rivers is quite small, there is enormous potential for this situation to change and also tremendous suffering in the subnational struggles for water that the conflict numbers ignore at their peril. Across regions, the numbers of cases of actual or suspected water poisoning (“terrorism”) suggest that water safety, in addition to food safety, should be a growing concern, especially in contexts where water supplies may be threatened by shrinkage or pollution (due to flooding or seawater seepage into clean natural sources), which might overwhelm local or state capacities to provide safe and adequate clean water.

Attacks aimed at dams reduce essential water as well as hydroelectric supplies. Bombing or poisoning wells or tanks (especially those that supply strategic populations, such as military) go well beyond the sporadic violence that finds individual farmers or herders shooting each other dead over water-access disagreements. Not all protests against unfair water allocations end in deadly violence, but this index count includes political actions that injure people seriously and cause extensive property damage. A more realistic and accurate statement, rather than that the next wars will be over water, is that all wars will involve water issues. No one should dispute this. The question is how climate change enters into these issues and what mitigation and adaptation efforts, aiming at disaster risk reduction and resilience, can do to avert disasters and violence.

Points of reference include increasingly severe competition for increasingly scarce water, scarcities caused by synergies connecting drought, population growth, and management failures, as well as in shared river systems and the propensity of upstream users to seize and dam supplies at the expense of downstream users.

Because the greatest proportion of fresh water is still used in agriculture, better management of moisture in agricultural processes – through selection of water-sparing crops or mixed cropping strategies that can use residual water more effectively and elimination of waste in irrigation – is the most important and promising area. But sustainable water management will likely be threatened by short-term agricultural and economic demands for food and revenues, which often take priority over water-cost efficiency. As a related issue, growing urban populations will need water and sanitation, meaning water supplies and recycling of urban waste water are related concerns.

Foodwars

Foodwars – armed conflicts in which food (hunger) is used as a weapon of war or where the legacy of armed conflict shapes conditions of hunger and suffering long after the active hot conflict has stopped – are also closely tied to interactive political and environmental factors. Such complex (combined political-environmental) causation characterized the famine situation in Ethiopia in 1974, and again in the mid 1980s under a different government. The country experienced several different waves of first voluntary and then involuntary migration out of drought-stressed areas, as people left or were forced by the government to leave in search of food and livelihoods, including international emergency relief. Without international efforts at mediation and remediation, such population movements can result in wider-spread suffering and violence, as shown in these Ethiopian cases (see in Messer, Cohen, and D’Costa¹⁰⁶), which spilled over into neighboring nations in the Greater Horn of Africa, where civil wars, equally responses to politics and climate factors, similarly spilled over into Ethiopia.

Foodwars and their related damages to agricultural production, livelihoods, health, and human well-being may be another driver of conflict, which can be examined as related to processes of global warming, moisture-regime change, and consequent transformations in the physical and biological environments of food production.¹⁰⁷ As hydrologists point out, prevention of food insecurity and conflict as climate change outcomes will depend very much on the politics of food, energy, water, and agriculture (see Falkenmark¹⁰⁸), and the political and economic decisions motivating adaptation-mitigation technology adoptions. Food trade and aid policies will also continue to be significant as sources of essential humanitarian and development assistance, as well as national food-security policies in climate-stressed countries, which likely will rely increasingly on imported food as sources of virtual water (see Allan¹⁰⁹). Globalization drivers, especially political-economy of agriculture in national economic development and local, household livelihood plans, will also be critical, as will measurements of these processes at micro- and meso-levels for understanding climate change impacts. Finally, food insecurity as a cause and consequence of conflict is also tied to migration as a principal factor in the CCCC arguments.

106. Messer, Cohen, and D’Costa, “Food From Peace” (1998).

107. E. Messer and M.J. Cohen, “Conflict, Food Insecurity, and Globalization,” *Food, Culture and Society* 10: 2 (Summer 2007): 297.

108. Falkenmark, “Water Cycle and People” (2004).

109. Allan, *The Middle East Water Question* (2001).

Population and migration issues

Although there persists disagreement over the salience of population growth as a factor motivating conflict in situations of relative (natural or political resource) deprivation, there is a growing consensus that population migration, both directly and indirectly, looms as a major conflict threat.

Neo-Malthusian thinking is always in the background, sometimes in the foreground, that population growth is a principal stressor, source of conflict, and obstacle to political stability and security. Natural population increase, as a stressor on available per capita access to natural resources, employment and livelihood opportunities, access to social services, and peaceful social relations, is worrisome as a challenging cause of conflict or conflict multiplier.

Demographic “youth bulges” in the context of poor economic outlooks, which cannot accommodate the livelihood demands and aspirations of young men (and women), also contribute to political instability.¹¹⁰ Their lack of opportunities and models of peaceful political paths to emulate might become worse under conditions of climate change, which limit traditional occupations and livelihoods.

But more substantially, population displacements resulting from demographic pressures are increasingly linked to conflict and violence, degradation of natural resources, and competition for social and political resources, which produce complex and continuing conflict cycles, especially where such selective response by government increases “horizontal inequalities” that are political/geographic/economic/religious (PGER) based, resentment, and undiscouraged and unchecked resort to violence.

In none of these demographic contexts do policy analysts suggest, following Boserup, that population should be viewed as a resource.¹¹¹ Instead, one finds in the substantive predictive and post-hoc modeling studies (e.g., Gleditsch et al.¹¹²) and scenario building (summarized in background papers to FIC 2010) wide and deep consensus that demographic displacements are and will be a dominant conflict factor.

110. US Agency for International Development, *Youth and Conflict: A Toolkit for Intervention*, Office of Conflict Management and Mitigation, Bureau for Democracy, Conflict, and Humanitarian Assistance (2005).

111. Boserup, *The Conditions of Agricultural Growth* (1967).

112. N. P. Gleditsch, R. Nordås, and I. Salehyan, “Climate Change and Conflict: The Migration Link,” *Coping with Crisis Working Paper Series*, International Peace Institute (2007).

Internal and external migrants

Migration, defined as movements of people out of their places of origin in search of lifesaving changes in habitation and livelihoods, is a principal response to environmental threats, which are anticipated to multiply under conditions of climate change. All scenarios and predictions across the political spectrum anticipate surges in population movement, although whether these will be short- or longer-term or permanent in time and place remain open questions, likely to be heavily influenced by the sending and receiving country conditions and policies. Policymakers, conforming to UN categories and institutions, distinguish responses to internally displaced persons (IDPs), who remain the responsibility of their sovereign governments, from responses to refugees, who cross national borders and in their new location become the responsibility of international organizations that operate at the discretion of the recipient-country government.

So far, the international community has been reluctant to consider environmental or “climate change” migrants “refugees”; they prefer to reserve this term (and its associated body of “refugee law” and “refugee rights” of non-refoulement, assistance, and protection) for those fleeing political disasters (armed conflicts) and persecution—even though many fleeing natural disasters and environmental degradation already do, and in the future more will, cross borders in response to the perils of staying in place within their country of origin, which in the case of some small island states may cease to exist. UN professionals and colleagues use the term “climate migrants” in preference to “climate refugees” or “IDPs”; this language defuses delicate political institutional differences over who cares for the displaced, based on whether or not they cross international borders and why they flee, and also puts the migration crisis in perspective, because migrants who initially moved within country may be forced to move outside of country, as in-country conditions worsen or as perceived external opportunities arise. Thus, migration may be primary or secondary, inside or outside a country, and affected by diverse drivers.¹¹³

Scholars, more than policymakers, also are reluctant to classify migration as primarily “caused” by natural or political factors, because in reality, “man-made” disasters usually overlap with natural causes, such as flood, drought, and volcanic eruption. Impact pathways demonstrate the ways natural disasters and hazards combine with government failures to respond adequately and/or without discrimination, so people are forced to move in search of survival and livelihoods. Additionally, governments often mismanage natural resources and disaster risk in ways that fail to protect less-favored PGER-identified groups against damages in complex disasters. In particular, large dam and other

113. Oxford Refugee Studies Centre, “Climate Change and Displacement,” *Forced Migration Review* 31 (2008).

hydroelectric projects and oil and mineral prospecting displace populations and cause immense human suffering, which has been under-addressed so far. CCCC discourse presents an opportunity for advocates seeking justice for these local and less-powerful victims of national economic development to capture the world's attention and bring assistance to these vulnerable, displaced folk.¹¹⁴

Thus, constellations of factors combine to force populations to move or to fight. Famine, caused by food wars, constitutes an additional meso-factor highlighting such conjunctions.

Political-economic conditions shaping migration and conflict

As indicated above, climate change stressors are expected to operate at multiple spatial, temporal, and social scales, and response mechanisms need to intervene at multiple political and social levels.

Coastal population displacements due to sea-level rise figure into most CCCC scenarios, as migrant populations increase pressures on resources that will become scarce, and sometimes bring with them arms and political violence that become sources of political destabilization in recipient countries. According to Oxfam International, there “may be more than a 50 percent increase in the numbers of people affected by climate-related disasters in an average year” (compared with the decade 1998–2007), which “could overwhelm the world's current capacity to respond.”¹¹⁵ Oxfam estimated that numbers could grow to 375 million in 2015 (although unnamed critics at the Feinstein International Center (FIC) at Tufts University carped that the conclusions used models and evidence selectively). The data on which Oxfam based this projection, from the Center for Research on the Epidemiology of Disasters,¹¹⁶ could be used in various ways; the findings are inadequate to capture the interactions between natural and political factors that might contribute to population numbers being affected or killed by these complex disasters.

Demographic displacements caused by war, personal insecurity, economic deprivation, and socioeconomic suffering, in addition to environmental factors, will also cause political instabilities. Human mobility, as a direct or indirect consequence of climate change and source of conflict, is the factor most discussed in CCCC discourse. Moreover, multiple sources note that resource-poor migrants may bring their wars with them; if they live in SSA, especially, they may cross borders in order to regroup and keep fighting. This fits the scenarios in the cases

114. Christian Aid, “Human Tide” (2007).

115. Oxfam International, “The Right to Survive: The humanitarian challenge for the twenty-first century” (2009): www.oxfam.org.uk/resources/papers/downloads/right_to_survive_report.

116. See www.emdat.be.

of cross-border hostilities involving ethnic-politically identified migrants in Chad-Sudan, Uganda-Sudan-DRC-Central African Republic, Rwanda-Burundi, and Rwanda-DRC. In these cases, water scarcity or “desertification” may be a trigger for population movement or for fighting over access to scarce water sources. But the cross-border interethnic hostilities preceded them.

Contributing to the mayhem, and sustainability of conflict, most sources emphasize that political instabilities and absence of rule of law make terror and criminal activity more likely, thereby intensifying, prolonging, and disseminating social disorder and violence. Trafficking in drugs, arms, and human beings provides the cash and violence that catapult identity politics (at subnational and national levels) into intrastate and interstate wars, which comprise global resource wars over control over legitimate and illicit resources (see Collier et al.¹¹⁷). This is not to say that there will not be new respondent players; scenario builders furthermore anticipate new political alliances and confrontations as Brazil, Russia, India, and China (BRIC) compete for information, material, and influence in a world not dominated by the US and the European Union.

In disseminating stories about the violence associated with climate change, population displacements, and violent struggles for control over economic resources, media that “hype” disaster reports also become implicated as sources and resources of political instability and conflict.¹¹⁸ Sensationalist coverage can lead to public pressures for greater humanitarian response, but in some instances contributes to new political instabilities and violence, as their painful photographs and oral or written accounts produce outrage and desire for revenge, rather than relief and reconciliation.

Resource scarcities, inducing decline in agricultural productivity, production, food security, and livelihoods, bring about increasing confrontations between farmers and pastoralists, who suffer from “agricultural encroachment,” but case studies indicate that such conflicts usually are due less to climate change (drought) and land degradation than some combination of damagingly inept government policies. For example, a study of the Mt. Elgon region of Western Kenya found that competition for land fueled PGER-based conflict, especially where environmental security was deteriorating as a result of climate change (desiccation), but state resettlement schemes, and state refusal or failure to intervene when clan-based and ethnic conflict erupted, contributed to violence.¹¹⁹

117. Collier et al. *Breaking the Conflict Trap* (2003).

118. UK DCDC, “Defence in a Changing Climate” (2010): www.mod.uk/NR/rdonlyres/378271EE-0F39-4DF2-8FBB-E56E42733AD6/0/DefenceinaChangingClimateFINAL.pdf.

119. R. R. Simiyu, “Militanisation of Resource Conflicts: The Case of Land-Based Conflict in the Mt. Elgon Region of Western Kenya,” Institute for Security Studies Monograph No. 152 (2008): www.ssrnetwork.net/uploaded_files/4341.pdf.

Similarly, in the Niger Basin of Mali, large-scale conversion of summer grazing lands to rice fields is an intentional government policy that favors farmers over pastoralists. In addition, official government policy attempts to create a meat export industry invite market competition from non-local (nonnational) pastoralists, which marginalizes locals. Beyond such economic displacements, deliberate political decentralization – with the strong encouragement of donors and international financial institutions – has also produced a power vacuum that fuels disputes and multiplies official political corruption. Young males displaced from pastoralism may also learn violence and acquire weapons as they seek livelihoods elsewhere and become engaged in other conflicts, which they bring home. Resultant violence on the part of former pastoralists results more from political ecology than natural resource scarcity, although drought and land degradation are implicated as part of the context.¹²⁰

In other settings, changing land use policy and government water control can marginalize traditional users and their water-user associations – again setting the stage for confrontational competition. Support for irrigation for export agriculture threatened pastoralists and downstream users along the Pangani River Basin in Tanzania. Government also dammed the river to create a more consistent flow. In this case, political administration and policy combined with change in the rains caused deteriorating livelihoods and violent clashes.¹²¹ Overall, water stress that creates risks of food crises from bad harvests can lead to conflict, but additional political and eco-demographic factors are always implicated.¹²²

Dozens of political-geographic studies published over the past few years (2007 to 2009) have emphasized the need for finer-grained, localized studies tying changes in rainfall to reduced access to natural resources necessary for productive agricultural and pastoral livelihoods, consequent reductions in livelihoods, and then conflict. Intervening political factors always include state capacities to provide services for adaptation and mitigation, migration, and alternative livelihood options, as well as place-specific political histories of identity politics and organized political violence triggered in response to livelihood failures and perceptions of unfair treatment. Dependence on water, especially the fisheries livelihood in coastal areas, and dependence on rainfall for agriculture and pasturage, are correlated with vulnerability, but politics is always part of the historical etiology of conflict. New energy policies that favor production of biofuels, or agricultural or coastal programs designed to mitigate

120. T.A. Benjaminson and B. Boubacar, "Farmer-Herder Conflicts, Pastoral Marginalisation and Corruption: A Case Study from the Inland Niger Delta of Mali," *The Geographical Journal* 45, 6 (2009): 71.

121. A. Hetherington, "The Spoils of Kilimanjaro," *Geographical* 80: 66 (2008): 66.

122. Brauch, "Conceptualizing the Environmental Dimension of Human Security in the UN" (2008).

climate change impacts, may also selectively perturb livelihood strategies and increase local vulnerabilities and conflict potential (e.g., Barnett and Adger¹²³).

Geographic studies suggest that a careful combination of geographic early warning, livelihood, and poverty mapping, in states that meet criteria for “failed states” and ethnic conflict, could help pinpoint where conflict could be expected, based on existing and climate change criteria linked to land and water issues. As a whole, this research recommends systematic comparative studies at multiple scales on all dimensions of human security, especially livelihood studies.¹²⁴ In addition to multiple geographic scales, models should adopt multiple time scales that could trace variations in interannual rainfall, vegetation, agricultural market prices and incomes, and other fluctuations that influence human security and perceptions of well-being.¹²⁵ These studies, modeling the impacts of climate change based on past correlations of weather, livelihood, and conflict, find that political-economic factors take precedence over environmental factors as security threats,¹²⁶ with resource conflicts leading to violence more likely to occur subnationally than internationally (e.g., Kahl¹²⁷), although these analyses may exclude high-value commodities, like petroleum or minerals.

Additional, but related, models also suggest that politics and economics (including “globalization”) are more important than natural factors, including demography. These point to the conclusion that it is access, i.e., political-economic factors that lead to perceptions of relative deprivation based on observations of social inequality, and the availability of political organizations that trigger conflicts, not resource scarcities per se.¹²⁸

Finally, yet another set of “peace research” studies probe how pre-existing political contexts of violence shape responses to environmental perturbations. The *Journal of Peace Research*, over 2007–2009, provided a number of peer-reviewed case studies, testing hypotheses about onset and upsurge of violence in particular historical situations. A special May 2009 issue¹²⁹ emphasized that

123. J. Barnett and W. N. Adger, “Climate Change, Human Security, and Violent Conflict,” *Political Geography* 26, 6 (2007): 639.

124. R. Reuveny, “Climate Change-Induced Migration and Violent Conflict,” *Political Geography* 26, 6 (2007): 656.

O. Thiesen, “Blood and Soil? Resource Scarcity and Internal Armed Conflict Revisited,” *Journal of Peace Research* 45, 6 (2008): 801.

125. C. Raleigh and H. Urdal, “Climate Change, Environmental Degradation, and Armed Conflict,” *Political Geography*, 26, 6 (2007): 674.

126. Ibid.

127. Kahl, *States, Scarcity, and Civil Strife in the Developing World* (2006).

128. C. Hendrix and S.M. Glaser, “Trends and Triggers: Climate, Climate Change, and Civil Conflict in Sub-Saharan Africa,” *Political Geography* 26: 6 (2007): 695.

129. See *Journal of Peace Research* 46:3.

livelihood vulnerability (poverty), at household, community, or provincial levels, was correlated with recruitment to violence, but that contact with armed parties was also a factor, as individuals chose “coping strategies” in different political situations of civil disorder and violence. These authors all advance micro-level (sometimes meso-level) analyses that illuminate local patterns of recruitment to violence and suggest guidance for future research and targeting of conflict-sensitive programs within conflict-prone areas:

- In Vietnam, evaluation at the local hamlet level during the US-Vietnam War era enabled researchers to describe the dynamics of recruitment to violence and explain growing intensity of violence. These researchers were able to categorize who entered and left the insurgency and why (based on political and economic motives) and also describe the relentless breakdown in civil order as government officials withdrew from dangerous hamlets, and so allowed insurgency to grow.¹³⁰
- In Burundi, micro-level analysis of the dynamics of 1993 killings pinpointed which provinces had participated and why. A post hoc International Commission of Inquiry concluded that “hunger for land” was only one factor, though an important one, for recruitment of otherwise peaceful Hutu farmers to violence. But looting (land, livestock) and ideological-political factors also entered in a context that included a perception that alternative livelihoods were unavailable.¹³¹
- In northern Mozambique, remunerative agricultural livelihood strategies, which can provide food and income, will be very important in building peace. Micro-level social, political, and spatial analysis should show at short- and longer-term time scales what roles cassava, cotton, or other crops might play in this process, and also attend carefully to gender factors in food and agricultural income. There is still opportunity for outside agents of change, or agencies delivering “safety-net” food and livelihood security programs, to build on local coping mechanisms against drought and other climate change hazards.¹³²
- In Aceh, prior to the 2004 tsunami, it was possible to show which regencies experienced violence, outmigration, and why. This “meso-level” analysis

130. S. Kalyvas and M.A. Kocher, “The Dynamics of Violence in Vietnam: An Analysis of the Hamlet Evaluation System (HES),” *Journal of Peace Research*, 46, 3 (2009): 335-355.

131. T. Bundervoet, “Livestock, Land, and Political Power: The 1993 Killings in Burundi,” *Journal of Peace Research*, 46, 3 (2009): 357.

132. C. Bozzoli and T. Brück, “Agriculture, Poverty, and Postwar Reconstruction: Micro-Level Evidence from Northern Mozambique,” *Journal of Peace Research*, 46, 3 (2009): 377.

suggested that Javanese migrants, in particular, fled violence, accelerating migration to cities, which were better protected.¹³³

- In Colombia, analysis of local cases of civil violence described preexisting political-identity cleavages, which encouraged individuals to ally with one or another armed group as a safety measure. This analysis suggests that study of the social organization of old and new communities, including PGER factors, is salient for understanding local, regional, and state civil disorder and population movements.¹³⁴

In summary, although livelihood sources, environmental stressors, PGER factors, and organized political dynamics differ case by case, all these case studies indicate (not surprisingly) that livelihood factors, including access to land, water, and in some cases government assistance programs are always implicated. But causality is complex. Scarcities leading to violent conflict present not simply hunger for land or fisheries, but also perceived absence of alternative livelihood opportunities in a context where vicious political elements promise relief and so recruit the downtrodden to violence. These studies add desire for physical protection in political situations that are already violent to the mix of other factors associated with recruitment to violence, which center on desire for material gain, including land, livestock, loot, or other assets of targeted victims of pillage.¹³⁵

All of these “recruitment to violence” conflict factors are likely to be operative in situations of climate change, where competition for natural resources and other livelihood sources are predicted to intensify. They suggest that political-geographic data sets, such as the International Military Intervention Dataset, can be a resource to pinpoint flashpoints of violence. In these places, international organizations are already scaling up military interventions, which increasingly carry not only security, but also humanitarian and development assistance.¹³⁶ Such military scale-up has important implications for livelihood strategies and regulation of economic life as nationals join security operations in increasing numbers that may influence dynamics of economic change on their original home fronts.

133. M. Czaika and K. Kis-Katos, “Civil Conflict and Displacement: Village-Level Determinants of Forced Migration in Aceh,” *Journal of Peace Research*, 46, 3 (2009): 399.

134. A. Steele, “Seeking Safety: Avoiding Displacement, and Choosing Destinations in Civil Wars,” *Journal of Peace Research*, 46, 3 (2009): 419.

135. P. Justino, “Poverty and Violent Conflict: A Micro-Level Perspective on the Causes and Duration of Warfare,” *Journal of Peace Research* 46, 3 (2009): 315.

136. J. Pickering and E.F. Kisangani, “The International Military Intervention Dataset: An Updated Resource for Scholars,” *Journal of Peace Research* 46, 4 (2009): 589.

Such studies have particular salience with respect to models of climate change in SSA, where the environment of political instability and legacy of conflict and foodwars that characterizes so many SSA countries construct a context where the impacts of climate change are likely to exacerbate livelihood failures and political circumstances leading to more conflict. In all these cases of alleged environmental “scarcities” as sources of conflict, it is also important to remember that causality works in both directions.

The “peace research” literature also emphasizes very thoroughly and convincingly the interactive effects of resource scarcities and political structures in resource management, which are the key to real and perceived resource scarcities that are interpreted to be causes of conflict. Some, like Sachs, assert that poverty is the main threat.¹³⁷ This would imply that studies of climate change and conflict/security address poverty as the root cause (e.g., Thomas¹³⁸). The case that is most self-evident or tautological finds that Bangladeshi out-migrants (to India) clashed with established residents in receiving areas, where poverty was also high (e.g., Assam in the 1970s and 1980s). But in such impoverished areas, one finds other political-economic contributing factors, including inequitable land-holding patterns, lack of environmental regulation, and poorly implemented public social welfare policies.¹³⁹

These findings raise the research question: In what situations do people who are poor and environmentally stressed follow policymakers’ recommendations and invest in infrastructure and capacity building instead of violence? One set of case studies that show promising results are situations of (non-climate change) natural disasters, including tsunamis, earthquakes, and volcanic eruptions across South and Southeast Asia, that seem to have produced more cooperation and efforts at peacebuilding than new conflicts or exacerbations of old ones.¹⁴⁰ These may also be situations where there exist some measure of stable political regime, acceptance of social stratification, or perception of some basic equalities, and where people maintain expectations and hope of resilient economic growth. These are the opposite conditions identified in statistical factor analyses of natural disasters (in general), which considered 187 cases and found high risk of civil war in contexts of high levels of inequality, mixed political regimes, and

137. J. Sachs, *The End of Poverty: Economic Possibilities for Our Time* (Baltimore, Maryland: Penguin, 2005).

138. C. Thomas, “Poverty,” in *Security Studies: An Introduction*, ed. P. Williams (New York: Routledge, 2008): 244–259.

139. Reuveny, “Climate Change-Induced Migration and Violent Conflict” (2007).

140. SIPRI Yearbook, “Annex B, Chronology 2005” (2006), 834: www.sipri.org/yearbook/2006/files/SIPRIYB06B.pdf 8.

Ploughshares, Armed Conflicts Report: Indonesia-Aceh (January 2007): www.ploughshares.ca/libraries/ACRText/ACR-IndonesiaAceh.html#Political.

sluggish economic growth. The latter indicates the human-security environment contains multiple threats.¹⁴¹

UNDP, which in its 2007 Human Development Report took “climate change” as its theme, tried to describe the varied economic, political, environmental, and security-conflict connections and in particular identify the kinds of eco-demographic factors that produce social crises, if not war.¹⁴² Yet all of these CCCC discourses raise the question, why frame “environmental security” as a threat, when environmental concerns could be accommodated under existing “sustainable development” and “environmental justice” frames. The value-added, say respondents, is that it “opens up” this territory to wider investigation than that of the military, who like to keep investigations secret (classified). It also calls attention to the petro-military-industrial complex that connects energy to environmental policy (e.g., Eckersley¹⁴³).

In sum, human security research, which includes environment as one of “new security threats,” finds a mixed picture, where climate change certainly threatens conflict potential, whether directly through water stress or mediated by food stress and migration. The advantage of “climate change” and “environmental security” framings is they may favor a broad, non-military security approach (e.g., Brauch¹⁴⁴). They also allow researchers to consider causation in both directions—cases where war is an environmental (or food-security) threat, among other “human security” threats, as well as environmental change as a security threat.

The most important findings to note in these connections are that only some substantive ecological and political factors associated with conflict and political stability are directly related to climate change, and the impact of climate disasters is always mediated through political structures and infrastructure. Also, these scenarios mention human rights violations and reduction in freedoms as a likely consequence of loss of US and European world leadership, in favor of China and other stubbornly anti-democratic authoritarian regimes, but tend to downplay their contribution as causes of conflict. These “security” scenarios largely ignore the positive contributions of human rights norms and principles of corporate and social responsibility over the past two decades. The summaries tend to paint a bleak picture and ignore certain glimmers of positive change, such as possible

141. P. Nel and M. Righarts, “Natural Disasters and the Risk of Violent Civil Conflict,” *International Studies Quarterly*. 52,1: (2008): 159.

142. UNDP, “Human Development Report 2007/2008—Fighting Climate Change: Human Solidarity in a Divided World” (2007).

143. R. Eckersley, “Environmental Security, Climate Change, and Globalizing Terrorism,” in *Rethinking Insecurity, War, and Violence: Beyond Savage Globalization?* D. Grenfell and P. James, eds. (New York: Routledge, 2009): 85.

144. Brauch, “Conceptualizing the Environmental Dimension of Human Security in the UN” (2008).

Chinese or other Asian contributions to the growth of the African economy and, especially agricultural production.

Environmental protection—For whom?

Without argument, climate change adds to conventional population and environment concerns, which have generated debate since the 1970s. These predict that population growth—and movement (migration)—will contribute to neo-Malthusian apocalyptic outcomes (starvation, epidemic disease, war, and death) should population growth and climate change trends continue. Contrariwise, by 1994 some experts were already “rethinking” this debate in ways that still have relevance and resonance, particularly when used in combination with International Alert’s provocative report recommending more attention to grassroots education about climate change as a source of social action at local-to-global scale.¹⁴⁵

Leading on this front, Lourdes Arizpe and colleagues urged analysts to think “up” to world “humanity” and “down” to local-level perceptions of stressors and possible responses, instead of agonizing over possible solutions to a present and looming “population” problem, with its demographic statistics and descriptors.¹⁴⁶ Such demographics, they argued, paid insufficient attention to political-economic details and plural social perspectives, which would/could/should influence humanity’s political and environmental futures. Examining multilevel responses to the challenge of conserving the Lacandon (Mexico) rainforest, for example, they find:

The deeper issue here is one that underlies debates all the way from Lacandon rainforest in Mexico to the UN [General Assembly]: Who is going to build this new economic and accounting system for the world?...Since nations are still trying to enhance their own “wealth of nations,” never having left the harbor of classical economics, each will try to build a system that, minimally, will keep its own interests untouched or, maximally, will increase its benefits.

At a more local level the question of who is creating the new rules of a global society is perceived in more immediate terms as who is going to bear the cost, actual or potential, of preventing or adapting to new conditions. Whether the debate engages rainforest cattle ranchers and indigenous peoples on deforestation or poor urban dwellers and rich urbanites on urban pollution or corporations and ecologists on economic development or the North and

145. Smith and Vivekenanda, “A Climate of Conflict” (2007).

146. L. Arizpe and M. Velazquez, “The Social Dimensions of Population,” in *Population and Environment: Rethinking the Debate*, ed. L. Arizpe, M. Stone, and D. Major (Boulder, Colorado: Westview Press, 1994): 36.

the South on the future of the world, what is at stake is the capacity of human beings to negotiate a common future. And for this purpose, the concept of humanity seems more germane than that of population.

Yet those who would claim to speak for the “world,” including UN or International NGO environmental activists, often fail to take into sufficient account either the national or multi-local claims and interests that they are displacing. Their conflicting claims and interests then become new sources of conflict.

Into this context CCCC proponents have entered with less nuanced assertions that population mobility constitutes the most important climate change security threat.

Population movements as a security challenge?

Clashes in land-use patterns and sovereignty or ownership claims over essential resources are also potential sources of indirect CCCC connections. Increasing numbers of studies emphasize migration, especially, as a key driver (e.g., Gleditsch, Nordas, and Salehyan¹⁴⁷) and are beginning to trace impact pathways from climate change to migration to conflict (with feedback loops) systematically. Security specialists counter that the impacts of population movements (will) depend on how receiving states or the international community will try to bring about change in the sending state – before conflict arises in the migrants’ new home. Large numbers entering in droves, or a few individuals at a time, will be received with hostility if they are perceived to be a threat to the ethnic identity and way of life of the recipient community, which may already feel besieged and threatened economically and culturally by newcomers (e.g., Bali¹⁴⁸). This is because migrants who are low on the economic scale and desperate for wage earnings, may work for less money and undo years of hard-won labor gains, while migrants who sometimes do arrive with superior economic resources and connections may bid up the prices of essentials like food and housing in their new venues.

Migrants sometimes arrive with firearms and violent conflict histories that do not dampen but instead are refueled in the new territories. The never-ending twentieth century wars pitting Hutu against Tutsi, nomadic pastoralists against farmers in Sudan and Ethiopia, and various South Asian groups identified as ethnic Indian, Nepalese, Bangladeshi, or Pakistani against each other, provide brutal testimonies to conflict-migration connections, with or without the

147. Gleditsch, Nordas and Salehyan, “Climate Change and Conflict” (2007).

148. S. Bali, “Population Movements” in *Security Studies: An Introduction*, ed. P. D. Williams (New York: Routledge, 2008).

multiplying vector of climate change, which all predict could make these bad war-prone situations worse.

Such migration-mediated CCCC scenarios have been embraced by the US National Intelligence Council, the Department of Defense, and British political commentators like Nicholas Stern, whose reiterations of views have been the subject of considerable controversy (see Box 2).

Box 2. UK government consultants: Nicholas Stern's incendiary economic-political outlook predicting conflict from climate change

In 2006, Lord Nicholas Stern authored a highly publicized report that concluded that the cost of inaction on climate change could be up to 20 times greater than the cost of acting now.¹⁴⁹

That report, commissioned by the United Kingdom's then-Chancellor Gordon Brown, and in the wake of Bjorn Lomborg's *The Skeptical Environmentalist*, is seen by some as a defining moment in the acceptance of the human causation of climate change.¹⁵⁰

"If we fail to manage climate change, we are likely to put ourselves in the position by the end of the century where temperatures will be 4 to 5 degrees higher, temperatures we have not seen for something like 10 or 30 million years," Stern said more recently while accepting an honorary degree from the University of Brighton. "It will redraw the physical geography as to where we can live, and billions of people will be put into severe conflict."¹⁵¹

Stern's 2006 report used financial logic (cheaper to invest in prevention now than amelioration after the fact) to urge immediate actions. Seen as advocating immediate investment against climate change, the report's main point was the high cost-effectiveness of prevention.

The more recent restatement, however, has emphasized the conflict (security) threat. By March 2009, Stern was reported to be predicting major world political conflagrations as a result of climate change. The main connector was vast population displacements as a result of the changing land-to-water earthscapes.

Why Stern, a well-respected economist (professor at the London School of Economics and former chief economist of the World Bank), chose this "fear" scenario mystified and troubled key British climate change advocates. For example, peace researcher Dan Smith wrote in his blog response that this "worst case scenario" was not only less

149. N. Stern, "Stern Review on the Economics of Climate Change," UK Office of Climate Change (2006): http://webarchive.nationalarchives.gov.uk/+http://www.hm-treasury.gov.uk/sternreview_index.htm.

150. Bjorn Lomborg, *The Skeptical Environmentalist: Measuring the Real State of the World* (Cambridge: Cambridge University Press, 2001).

151. Metro.co.uk, "Global Warming Will See 'Billions at War'" (August 4, 2009): www.metro.co.uk/news/714676-global-warming-will-see-billions-at-war.

likely but a terrible communication strategy for advocacy. This is because claiming that climate change is the cause of earth's political rearrangements and inevitable conflict not only oversimplifies, it fails to connect climate change to the other stressors and risks that the earth is facing, and it also tends to fan the flames of inevitability, helplessness, and hopelessness, which are not productive for action.¹⁵²

Earlier interpretations of Stern's CCCC positions were accepted as being cited out of context, but this more recent, very short statement, given in the context of Stern's receiving an honorary degree at Brighton, makes his CCCC position clear.

Such general economic models thus tend to favor hot CCCC positions, based on economically and politically destabilizing population movements. However, those researchers examining the environmental-change factors influential for migration find, not surprisingly, that prior individual, household, and community experience of mobility is significant; in general form, prior movements create knowledge and networks that make certain channels and corridors of migration more likely. Such ties can also moderate conflict potential. In these migration case studies and models, it is not the severity of climate change that pushes migrants out in cases of long-term change or even short-term insults, but perceptions of the severity of crisis and how likely migrants think it would be to mitigate crisis in a new location (see Hugo¹⁵³; Black et al.¹⁵⁴). These authors favor a more measured, and politically and culturally more complex, approach to analysis of direct and indirect impact pathways connecting migration to conflict (see also Gleditsch et al.¹⁵⁵).

Scenarios

Following the substantive findings, the likelihood of conflict and warfare in futures exercises depend on which factors are emphasized as outcomes of climate change. To this end, various public ("security") agencies and private companies (especially energy and information technology corporations) have engaged in "visioning" exercises, which follow various methodologies (reviewed in several places, including all the FIC Climate Horizons reports¹⁵⁶). These enable participants to give voice to their deepest and most pressing political concerns

152. Dan Smith, "Stern, Climate, and 'Extended World War,'" Dan Smith's Blog (February 26, 2009): <http://dansmithsblog.com/2009/02/26/stern-climate-change-and-extended-world-war/>.

153. G. Hugo, "Environmental Change as a Cause of Migration," 2nd Expert Workshop on Climate Change, Environment, and Migration, Munich, Germany (July 23–24, 2009): www.munichre-foundation.org/NR/rdonlyres/997729DA-B698-4255-9DA0-BDBBC670A76E/0/20090806_ExpertWorkshopSyllabus_web.pdf.

154. R. Black, et al., "Demographics and Climate Change: Future Trends and Their Policy Implications for Migration," Working Paper T-27, Development Research Centre on Migration, Globalisation, and Poverty, University of Sussex (2008).

155. Gleditsch, Nordås and Salehyan, "Climate Change and Conflict" (2007).

156. For example, Khan and Najam, "The Future of Globalization and Its Humanitarian Impacts" (2009).

and outlooks, based on their understanding and fears in the present. They range from the disciplined and regimented to the impressionistic.

Anyone who followed the progress of the UN development summits in the 1990s will find it peculiar, perhaps demoralizing, that these scenarios (e.g., US NIC¹⁵⁷) focused almost exclusively on negative outcomes and disasters (back to Malthus' four horsemen, without intentional reflection), in contrast to those spearheaded by great visionary leaders of UN agencies, such as James Grant (who challenged global child health conferences to dream and then do something to bring about a world of child survival) or those who were inspired to assert that hunger could be cut in half by the end of the decade (then, 2015, or 2020). In these prognostications of the new millennium, there is nothing upbeat; nothing particularly optimistic.

Without probing who has participated in these exercises, one finds that the scenarios predicting more death, deprivation, and devastation in SSA unfold relentlessly; although Asian nations will emerge as new poles of power, some scenarios find them collapsing in conflicts. In a future, world with or without the West, China and then Russia, loom large. The world is no more peaceful (not clear if it is "cleaner") when the United States loses predominance in favor of China with others. In NIC's four scenarios, the security threats will come from China (with Russia). There is a climate-related piece in each: "A World Without the West" sees China and Russia allying over Chinese purchase of Russian (clean) energy resources. "October Surprise" finds major storms wreaking havoc and causing political and economic instability in New York and China (where dam collapses cause a serious political crisis for the Chinese ruling party).¹⁵⁸ "BRICs Bust Up" assumes the worst about Asian national rivalries but also a hopeful note about the emergent power of non-Asian BRIC intermediaries (e.g., Brazil) to avert all-out nuclear war and "Politics Is Not Always Local," which sees NGOs (within the context of the UN) taking on more regulatory roles relative to states. This is a "globalization" scenario, which trusts non-state actors to do more to protect the interests of planet earth than the current bands of state

157. Chapter 5 is dedicated to "Growing Potential for Conflict." Prior chapters offer a more balanced "if...then" set of scenarios, where, e.g., SSA agriculture might benefit substantially from growing ties to South and East Asia (a new Asian-led green revolution for Africa). These are absent here. Here, conflict is conceptualized in terms of competition for nuclear arms, energy resources, and other economic power and influence. Water, especially in the Himalayan and Middle Eastern regions, is viewed as a likely source of more localized conflict and regional conflict that could escalate into international war. The chapter sees many non-conventional aspects of warfare (including epidemic disease, cyberwarfare), but not food scarcity per se, as conflict drivers. More hopefully, the final scenario sees concern with addressing environmental change as a driver toward more-effective and inclusive world governance, including 20 civil-society representatives as regular participating and voting members in the UN General Assembly.

US NIC, *Global Trends 2025* (2008).

158. In this scenario, flooding of Manhattan causes the New York Stock Exchange to relocate to New Jersey. This echoes the events of September 11, 2001, but is also amusing, given the New York sprawl into the neighboring state. Anyone who has spent time in New Jersey knows that it would be quite severely affected by the same weather patterns.

actors. But it seems to ignore the possibility that leaders may be the same folks who now have joined the ranks of the NGO (political) opposition.

Keys to change in all these scenarios are energy, material, and information technologies, which can promote various kinds of efficiencies, especially through recycling of materials (especially waste water). This should have an impact on water scarcity, but such discussion is not front and center on the agenda. While all these scenarios deal with new political coalitions, they do not necessarily engage forcefully with social technologies. For example, the US NIC report highlights water scarcities and losses of agricultural production in various world regions, especially SSA; it also accepts predictions that climate change will create some 200 million “climate migrants.”¹⁵⁹

Scale

Scale from local to subnational and national, and then international, enter into the particulars and connections of climate change and conflict. First, under what circumstances do local conflicts escalate into regional ethnic confrontations and civil war? Second, whether increasing numbers of smaller-scale environmental disasters will combine into mega-disasters depends on early warning, monitoring, and response. Some of the “increase” reported in localized disasters has everything to do with more (and more standardized) reporting mechanisms, which are part of response DRR processes (see Oxfam International¹⁶⁰; UNISDR¹⁶¹).

Smith and Vivekenanda address issues of conflict potential in interventions at multiple scales.¹⁶² They insist conflict sensitivity analysis needs to be applied in all climate mitigation and adaptation projects; this is seldom done at present. The theme continues from Dan Smith’s earlier findings, which showed that structural-adjustment policies and demands often make conflict a greater risk and reality for the nations affected.¹⁶³ Here the authors focus on grassroots local actions, which are necessary to build into national capacities for self-reliant response, but the main focus is again economic: how to create more jobs, secure livelihoods, which will also protect the environment, and prevent environmental deterioration and conflict in sustainable ways. The authors argue that such

159. This figure is also reported as likely in an IOM study. See Frank Laczko and Christine Aghazarm, eds., “Migration, Environment and Climate Change: Assessing the Evidence,” IOM (2009).

160. Oxfam International, “Climate Alarm: Disasters Increase as Climate Change Bites,” Oxfam Briefing Paper 108 (2007): www.oxfam.org.uk/resources/policy/climate_change/downloads/bp108_weather_alert.pdf.

161. UNISDR, “Hyogo Framework for Action, 2005–2015” (2005): www.unisdr.org/eng/hfa/docs/Hyogo-framework-for-action-english.pdf.

162. Smith and Vivekenanda, “A Climate of Conflict” (2007).

163. Dan Smith, “War, Peace, and Third World Development,” Occasional Paper No.16, International Peace Research Institute, Human Development Report Office (1994).

conflict-sensitive education and awareness building are necessary in all countries in the world, whether or not they have recently experienced conflict. This approach shifts the emphasis toward finding resources to fund awareness for adaptation and prevention and away from the predominant policy and regulatory emphasis on reduction in greenhouse gases. Conflict looms large in their outlooks and recommendations as they advance ideas of “bottom-up” peacebuilding as a counterpoint to top-down mitigation. This grassroots approach requires community-focused capacities, which in the past featured NGOs. In the present and future, it may move more toward CBOs, which may be linked to each other, to national governments, and in international networks.

Significantly, in this grassroots-dynamics model, the required political change must occur at the grassroots through capacity building. It is not the conventional top-down “regime change,” although that may follow. The goal is grassroots democracy, with awareness leading to action, but it is as yet unclear what organizations will favor democratic control leading to appropriate climate actions. Indeed, the history of decentralization efforts – putting more power and resources in the hands of those outside of central government – has produced some conflict disasters in response to the breakdown of state authority. In Mali, the combination of political corruption and scanty rains decimated pastoral occupations as livelihood options and pushed young men (Tuareg) into rebellion. In other cases, political (dis)favoritism can also rearrange political powers in violent ways. In Sudan, selective government neglect in Darfur resulted in underdevelopment and rebellions, which fed on themselves, resulting in cycles of conflict (see detailed discussion below).

In each of these cases, water scarcity and desertification are linked to livelihood failures, to movements of pastoralists, and to their violent confrontations with farmers. However, climate change is not all that is going on; clashes and conflicts also require government actions or inactions, which make a bad situation worse, by non-response or vicious response, such as funding raiders and killers.

Movement away from government top-down interventions to the grassroots investments may be necessary, but not sufficient, to overcome years of underdevelopment in economy and civil society.

Scale-free networks?

Seemingly at odds with such careful, scalar analysis are the activities by modelers in various disciplines who seek scale-free universal organizational principles and paradigms to describe the architecture of material, informational, and social “systems.” It is relevant to raise these methodological scenarios because political scientists, working with physicists, are beginning to model conflicts in SSA and also the impacts of climate change on such regional conflicts

as Sudan-Ethiopia-Somalia (see reference to Jurgen Scheffran's 2009 case study of Darfur, Sudan, in note 186). Scheffran, who until August 2009 was working with a center for advanced bioenergy research at the University of Illinois, moved to the new Climate Change and Security Center, established as a center of excellence at the University of Hamburg, where he defines his new area as follows:

The term climate security...includes impacts on national and international security as well as the implications for human and ecological security, depending on who or what is affected. An extended and comprehensive understanding of security stands in contrast to a narrow meaning that would identify climate change primarily as a threat to national security and see military instruments as adequate for coping with the climate crisis.

Yet he is careful to qualify images of impending disasters:

In a climate that triggers a cycle of environmental degradation, economic decline, social unrest and political instability, violence may indeed become more likely. Conflicts may spread to neighbouring states, for example through refugee and resource flows or arms exports, which can destabilize regions and overstretch governance structures. However, researchers need to be careful not to oversimplify the climate-security nexus by drawing a direct path from climate change to war, as if this is unavoidable. While climate-related shocks may add stress to the world's existing conflicts, this impact will be hard to single out among a set of other conflict factors...It is also important to focus not only on threat analysis but to pay attention also to a possible positive coupling of constructive and solution-oriented climate and security policies, which would mutually enforce each other.¹⁶⁴

Summary: Climate and conflict connections (generalizations) in futures scenarios

Directly, climate change will result in water scarcity/desertification in distinct areas, leading to competition and conflict over access to scarce resources (water, well-watered agriculturally productive lands).

Directly, climate-change-influenced changes in moisture regimes (droughts, floods) can lower food production and raise food insecurity in particular places,

164. Environmental Conflict and Cooperation, "Academia Takes on 'Climate Change and Security,'" newsletter (April 2009): www.ecc-platform.org/index.php?option=com_content&task=view&id=1694.

leading to food insecurity as a cause of conflict, but patterns of causality are complex.¹⁶⁵

Directly, extreme weather events (in context of government failure to be prepared for adequate response or unequal response that discriminates against some) lead to conflict (civil protests, civil war) and population displacements.

Directly and indirectly, “climate migrants” (displaced populations) politically destabilize the places they go to, as well as come from.

However, there is “no consensus yet.”¹⁶⁶

165. Messer and Cohen, “Conflict, Food Insecurity, and Globalization” (2007).

E. Messer, M.J. Cohen, and T.J. Marchione, “Conflict: A Cause and Effect of Hunger,” Environmental Change and Security Program, Woodrow Wilson International Center for Scholars (2001): 1.

Messer, Cohen, and D’Costa, “Food From Peace” (1998).

166. I. Salehyan, “From Climate Change to Conflict? No Consensus Yet,” *Journal of Peace Research* 45, 3 (2008): 315.

Country case studies

Darfur, Sudan

Sudan, since the 1980s, has suffered a series of civil wars, the results of which display the destructive interplay between political and environmental factors. For those who anticipate major population displacements resulting from climate change, the terrible interethnic violence in Darfur is a prime already-existing case in point. UN Secretary-General Ban Ki-Moon and other officials point to land degradation and drought as “root causes” of conflict in Darfur, particularly at times when it is convenient to motivate support for UN climate change initiatives (such as in the run up to the Copenhagen climate summit of 2009) and deflect attention from political leadership failures, although obviously there are additional political factors in play.¹⁶⁷ Particularly in the aftermath of Hurricane Katrina, well-placed environmental journalists, such as Faris, with no first-hand expert knowledge of the political/geographic/ethnic/religious (PGER) factors underlying the conflict, forcefully asserted that the “roots” of the Darfur conflict lie in climate change.¹⁶⁸ By contrast, for those who do have close knowledge of the Darfur conflict, climate, and politics (e.g., de Waal¹⁶⁹), political factors always take precedence over climate change, although shrinking access to grazable and cultivatable land, which pits herders against farmers, is always implicated. Similarly, a UN Environment Program (UNEP) fact-finding team sent to Darfur was careful to qualify its environmental attributions in its 2007 report, “Sudan Post-Conflict Environmental Assessment,” linking environmental-deterioration factors to violence in a minority of regions and cases: “These linkages do exist but their significance and geographic scale should not be exaggerated.”¹⁷⁰

The UNEP report documents that land use confrontations have been sources of conflict and violence in Darfur for at least 70 years. However, until 1970, local dispute resolution mechanisms managed to contain them. Unfortunately, the state-building process eliminated these local legal structures but did not replace them. And national (northern government vs. southern Sudan) civil war and regional (Ethiopia, Chad, Somalia, Uganda, Libya) conflicts made violent livelihoods with small arms a growth industry and occupation. As a result, these

167. Ban, “A Climate Culprit in Darfur” (1997).

168. S. Faris, “The Real Roots of Darfur,” *The Atlantic* (April 2007): www.theatlantic.com/doc/200704/darfur-climate.

169. Alex de Waal, “Is Climate Change the Culprit for Darfur?” Making Sense of Darfur Blog, Social Science Research Council (June 25, 2007): <http://blogs.ssrc.org/darfur/2007/06/25/is-climate-change-the-culprit-for-darfur/>.

170. UNEP, “Sudan Post-Conflict Environmental Assessment” (2007): http://postconflict.unep.ch/publications/UNEP_Sudan.pdf, 80.

local conflicts have not been contained; on the contrary, they have scaled up in intensity, especially with assistance from external funders.

Country-wide, deliberate government policies favoring expansion of irrigated (mechanized) agriculture in conflict-prone areas has drawn down the land area available for traditional farming and herding and exacerbated tensions between farming and herding groups.

Again, climate change contributes to this lethal mix, as “failed” pastoralists fall victim to land degradation and drought. It is not the prime driver, however, government policy is – although neither is the major factor driving the case of conflict in Darfur, which is motivated by government politics and PGER factors.

In the case of Darfur, conflict also contributes to these damaging outcomes, usually associated with “climate change,” both directly and indirectly. Over the past decade, combatants deliberately targeted and destroyed water infrastructure, making settlements uninhabitable due to “water scarcity.” Combatants also deliberately cut down trees and destroyed fields and pastures – as part of “scorched earth” strategies that succeeded in driving resident populations away – so former residents could not return.¹⁷¹ UNEP’s Darfur assessment teams also observed uncontrolled logging, also connected to the breakdown in authority and rule of law. Outcomes of the sustained impacts of war economies are underinvestment in environmental resources and their management plus poverty, which drive people to degrade resources further, as firewood cutting and charcoal making, which contribute to deforestation and desertification, become new livelihood strategies. Viewing and interpreting such evidence of environmental destruction, UNEP had already concluded in a 2004 assessment that desertification was the result of farming and herding, as well as refugee activities.

These human causes of environmental and social destruction clearly have complex causes and human rights implications, which tend to get oversimplified in blogosphere postings. For example, one Worldwatch Institute posting states:

According to a 2004 UNEP assessment, the scarcity of water and fertile land in Darfur has long been a source of conflict between farmers and nomadic groups. In 2003, rising resource tensions as well as ethnic, cultural, and religious differences triggered an insurgency by rebel groups, provoking a government crackdown that has resulted in widespread violence and the deaths of an estimated 450,000 people. In a May 5 address at The George Washington University in Washington, DC, UN Secretary-General Kofi

171. Ibid, 92.

Annan stressed the need for international cooperation “to help the people of Darfur, whose human rights have been violated in the most appalling way.”

Historically, farming and livestock grazing have been among the leading causes of desertification in Darfur, but now refugee camps too are contributing to the loss of already scarce vegetation. Family members, dependent on firewood to cook their food, are being forced to venture farther from the camps to find sparse fuel, putting them at greater risk for attack by the government-backed *Janjaweed* militia.

To alleviate conditions, Refugees International, a humanitarian assistance organization, is helping to train refugees in the construction of fuel-efficient stoves made from water, dirt, and grass or animal dung, which reduces the number of trips into unsafe areas and stems fuelwood-related desertification. In addition, UNEP proposes creating more options for livelihoods within refugee camps, such as skill-building and setting up a wage labor system for camp management activities. On a grander scale, UNEP supports preserving vegetation, planting trees, adopting organic farming techniques, and harvesting rainwater to prevent desertification.¹⁷²

In this case, the “problem” to be solved is lack of fuel, which Refugees International, a humanitarian nongovernmental organization (NGO), is endeavoring to “solve” with more fuel-efficient stoves. Another “problem” is livelihoods in the refugee camps, which UNEP is proposing to solve by skill-building and paying refugees for employment in camp management. According to this blog, UNEP also asserts “grand plans” for sustainable environmental management.

Another proposed “solution,” this time to the “water scarcity” problem more generally, involves drilling into a vast underground aquifer as a source of new water. This hydrological definition of the problem and its solution responds to the common sense understanding of the situation in Sudan, the anticipated breadbasket of the Middle East, which is that the land is drying out, and it is desertification that is causing an increase in confrontations and violence between herders and farmers. In this context, some insist the solution is to find new sources of water. But given the political-economic context, water will not end conflicts, and could create more. If government (or lack of government action) is the challenge, just identifying an underground lake is not the solution. A more important set of solutions must be to rebuild water infrastructure as steps (“facts”) on the ground in the direction of peace, to find ways to negotiate

172. Alana Herro, “Desertification Is Important Factor in Darfur Crisis,” Eye on Earth story, a joint project of Worldwatch Institute and Blue Moon Fund (2006): www.worldwatch.org/node/4087.

provincial and local control over resources, and to increase government investments in Darfur, among other regions.

In a 2007 blog posting, referring to a specific and lengthy UNEP report, Worldwatch states:

In Sudan's Darfur region, brutal scorched-earth tactics by nomadic militias and government army units have killed at least 200,000 people and forced 2.5 million out of their homes since 2003. Stopping the mass violence has become a rallying cry for many who argue that there is a need for "humanitarian intervention." The Enough Project, for instance, calls for an approach that mixes peacemaking, protection, and punishment of perpetrators of mass violence. In contrast to such sweeping demands, however, negotiations have focused on shoring up a weak African Union mission by deploying a "hybrid" African Union/UN peacekeeping force.

While Darfur shows the limits of current peacekeeping and humanitarian policy, it is also becoming clear that the roots of conflict are not found in the often-repeated claim of simplistic "ethnic hatreds." To a considerable extent, the conflict there is the result of a slow-onset disaster – creeping desertification and severe droughts that have led to food insecurity and sporadic famine, as well as growing competition for land and water. The *Sudan Post-Conflict Environmental Assessment* – a new report by the UN Environment Program (UNEP) – argues that severe environmental degradation is among the root causes of the conflict....

- Deserts have spread southwards by an average of 100 kilometers over the past four decades.
- Land degradation is linked with overgrazing of fragile soils. The number of livestock has exploded from close to 27 million animals to around 135 million.
- A "deforestation crisis" has led to a loss of almost 12 percent of Sudan's forest cover in just 15 years, and some areas may lose their remaining forest cover within the next decade.
- Declining and highly irregular patterns of rainfall in parts of the country – particularly in Kordofan and Darfur states – provides mounting evidence of long-term regional climate change. In Northern Darfur, precipitation has fallen by a third in the past 80 years.

Achim Steiner, the agency's executive director, warns that "Sudan's tragedy is not just the tragedy of one country in Africa – it is a window to a wider world underlining how issues such as uncontrolled depletion of natural

resources like soils and forests allied to impacts like climate change can destabilize communities, even entire nations.¹⁷³

Yet in its priority focus on environmental degradation as the root cause, this blog posting misses the not-so-subtle but substantive UNEP arguments that political factors, namely the government of Sudan's intentional violence, coupled with real lack of control over environmental management are the most important root causes and contributors to desertification, overgrazing of fragile soils, and the “deforestation crisis” brought on by such political mismanagement.

Careful reading of the UNEP report suggests that in this conflict, more fuel-efficient stoves or even another good source of water (the new underground aquifer) will not solve the problem. Rather, it is the political-economy associated with war, with its violence, lawlessness, poverty, and lack of investment in present and future resources, which, in endless cycles, is the “root cause” of conflict.¹⁷⁴ Under these circumstances, the UNEP team’s recommendations fall in the arena of land-use policy reform, which are also a form of climate mitigation.

Careful reading of UNEP’s original study reveals that the investigators tie the various components of environmental crisis to failures in environmental management, positing, “Among the root causes of decades of social strife and conflict are the rapidly eroding environmental services.” These services include investment in environmental management, including climate adaptation measures; capacity building of national and local government in environmental affairs; and the integration of environmental factors in all UN relief and development projects.

The report itself, in chapter 4 (“Conflict”) section 3 (“Analysis of the Role of Natural Resources as a Contributing Cause of Conflict”) acknowledges that many non-environmental (PGER) factors have caused conflict in Darfur, as in other parts of Sudan, and environmental management should be viewed as a contributing factor, not a root factor. Having presented this caveat, the report’s authors then explicitly ignore non-environmental factors in their analysis¹⁷⁵ of natural resource factors as causes of conflict: petroleum/natural gas, Nile waters, timber, and agricultural and pastoral land and water use. The study concludes that rather modest investments of \$120 million over four to five years could help localities and the nation adapt to and mitigate environmental stressors. This small fraction of Sudan’s annual take from its petroleum wealth is nevertheless

173. M. Renner, “Desertification as a Source of Conflict in Darfur,” Worldwatch Institute (June 23, 2007): www.worldwatch.org/node/5173.

174. UNEP, “Sudan Post-Conflict Environmental Assessment” (2007).

175. Ibid, 77.

contested, because peace agreements have not yet established mechanisms for monitoring oil income.

The 2007 Worldwatch blog does provide some balance, implicating the government of Sudan and also conditions in surrounding countries:

[T]he *Sudan Environment Conservation Society* says that average annual rainfall in El Fasher in northern Darfur has dropped nearly in half since data was first gathered in 1917. Meanwhile, Darfur's population – and with it, pressure on the land – has grown six-fold over the past four decades, to about 6.5 million.

Resource challenges might have spurred cooperation between Darfur's farming and nomadic communities. The two populations have both a history of competing for scarce water and fertile land, but also a record of economic interdependence and a tradition of seeking negotiated solutions. But encroaching deserts have pushed nomads further south and into *growing conflict* with farming communities. Increasing scarcity has led to rising tribal antagonism over the past 20 years.

Darfur has also experienced increased banditry and lawlessness, and it has played involuntary host to insurgent groups from neighboring Chad. Decades of economic and political *neglect* by the central government in Khartoum finally led to rebellion in February 2003. The Sudanese government responded by *playing up ethnic distinctions* and arming the so-called *Janjaweed* nomadic militias. [Emphasis added.]

Both environmental restoration and reconciliation between different communities are key. And those driven off their land by the conflict need to be either allowed back home or resettled in sustainable communities. Refugee camps in Sudan and neighboring Chad themselves are *contributing* to additional environmental degradation: the displaced have little choice but to cut down trees for firewood, or to deplete the little underground water there is.¹⁷⁶

Additional sources cited by secondary or tertiary sources (e.g., *Seed Magazine* – “A Hostile Climate”¹⁷⁷), include the US and UK military and Human Rights Watch and other NGOs. In this *Seed* account, the “peace implications” of climate change vary.¹⁷⁸ For example, British Home Secretary John Reid opined: “The blunt truth is that the lack of water and agricultural land is a significant

176. Renner, “Desertification as a Source of Conflict in Darfur” (2007).

177. *Seed Magazine*, “A Hostile Climate” (October 2006): http://seedmagazine.com/content/print/a_hostile_climate/.

178. *Seed Magazine*, “A Hostile Climate” (2006).

contributory factor to the tragic conflict we see unfolding in Darfur. We should see this as a warning sign.”¹⁷⁹ But such commentaries stop short of a proposed plan of action in response. Human Rights Watch, which did not stop at “resource wars,” blamed the human-rights-violating government for not establishing water management and distribution systems to prevent conflict and ensure basic human rights are met. Klare added the upwardly mobile consumer’s standard of living, which reduces resources for poorer people in far-off places.¹⁸⁰ But in Darfur, an additional threat is the encroaching desert. None of these is a firsthand account or first-hand historical research.

By contrast, two Feinstein International Center researchers¹⁸¹ and their colleagues,¹⁸² who have worked closely with drought-afflicted populations over the past 25 years, suggest a more nuanced account that blames politics much more than the weather. These accounts of Darfurian livelihoods over the past decade implicate political ecology, which is not the same as blaming drought, desertification, or other markers of “climate change.” This research furthermore finds that there are no good data on conflict dynamics. Darfur, traditionally a surplus-grain-producing area, self-sufficient in food, now must rely on food aid, mainly sorghum, although local millet is still preferred, to feed humans and livestock. Population displacements and lack of security have greatly reduced farming, even though people continue to clear land of acacia trees to sow cereals. Cereal markets, where traditional supplies have been severely damaged by fighting, continue to function by selling food aid, which has been looted or sold, while farmers who grew traditional cash crops—tobacco, peanuts, gum arabic, and oranges—have had to adjust to the conditions of violence, meaning that sellers pay protection money and use more circuitous paths to market, and livestock is moved in smaller numbers over longer routes. Trees have been cut, reducing gum arabic, to fuel timber mills, which supply wood *to meet the demand of the ever-enlarging aid community*. The government is supposed to regulate such operations, but it has totally broken down. In recent context, the poor 2007–2008 harvests were blamed on inadequate rains, locusts, and weaverbird infestations, but the authors view the larger political economy as the main threat. They suggest that food-chain analysis would be the most fruitful approach to understanding foodwars in Darfur: Look at individual crops, who controls them

179. J. Reid, “John Reid on Climate Change and Global Security,” Reuters (2006): <http://blogs.reuters.com/great-debate-uk/2009/12/05/john-reid-on-climate-change-and-global-security>.

180. Michael Klare, *Resource Wars: The New Landscape of Global Conflict* (New York: Metropolitan Books, 2002).

181. M. Buchanan-Smith and A.A. Fadul, “Adaptation and Devastation: The Impact of the Conflict on Trade and Markets in Darfur,” Feinstein International Famine Center (2008).

182. Helen Young and M. Osman, et al., “Darfur-Livelihoods Under Siege,” Feinstein International Famine Center (2005).

Helen Young, Abdal Monium Osman, Ahmed Malik Abusin, et al., “Livelihoods, Power, and Choice: The Vulnerability of the Northern Rizaygat, Darfur, Sudan” FIC (2009).

at each level, and how each level is affected by conflict. They also recommend better credit and processing facilities to improve livelihoods.

De Waal, who has worked in Darfur since the early 1980s and lived there with locals during the 1983–1984 drought (see de Waal¹⁸³), sees political-economy and the government's actions/inactions as more significant than resource scarcity per se.¹⁸⁴ He and colleagues assert that the scientific evidence base is incomplete; they suggest that the situation of Sudan needs to be considered in the context of warming and drying trends across the Sahel. They point out also that land-use patterns are responsible for much of the observed damage. In Darfur, the UNEP assessment team mentions malicious cutting of mango trees, meant to remove all claims of prior occupants to the land and to make sure that they do not return. Cutting timber for construction and firewood also contributes to deforestation and desertification. Overgrazing contributes to decimation of vegetation and soil breakdown. De Waal carefully reviews the historical evidence against a background of interactive climate and political change.

A second factor is population growth, which accelerates trends in environmental mismanagement. As population grows exponentially, by simple arithmetic more people are affected. De Waal also makes the interesting point that if one dimension of the Malthusian paradigm is famine as a correction for overpopulation, this has very short-term applicability in the Darfur case, where population has rebounded from famine-related deaths in 1984–1985 and low birth rates. By 2003, population had grown from 1.3 million at Sudanese independence (1956) to 6 million, which was almost double the population in 1984. But there was no comparable investment in agricultural technology and infrastructure to raise food production and security. The only major technological change was farmers fencing property where they had diesel pumps for irrigation.

This leads de Waal to postulate that political-economic factors lie at the root of the conflict. No government investments, and no government response to famine, put Darfur on a collision course with the government. Economic incentives for violence among asset-poor youth, compounded by political violence, raids by tribal militias (1985–1986), Chadian militias (armed by Libyans), and then government-assisted violence connected to the *Janjaweed*, by which time everyone had automatic weapons, caused widespread destruction, loss of life and livelihood, and migrations southward. Chadian camel nomads continued to be a major source of violence, especially for farmers.

183. A. de Waal, *Famine that Kills: Darfur, Sudan* (Oxford: Clarendon Press, 1989).

de Waal, *Famine that Kills: Darfur, Sudan*, 2nd rev. ed. (New York: Oxford University Press, 2005).

184. de Waal, "Is Climate Change the Culprit for Darfur?" (2007).

De Waal also observes that after 1985–1986, there was a power vacuum in the domain of conflict resolution as the government – with other raiders – had disrupted the traditional social mechanisms, but Khartoum did not replace these local authorities. Peace agreements stalled for lack of political will, authority, and capacities to intervene, even as Khartoum continued to arm various players. Migrations then created new tensions to the south and east. In a series of blogs, de Waal reviews the evidence, and then has his evidence reviewed, and reaches the conclusion that government is and was the main cause of the Darfur conflict:

- Government actions/inactions, not climate change, killed 200,000 to 400,000 people and displaced 2.5 million.
- Social and political conditions, not simply or mainly climate and land conditions, are the culprit.
- A key political issue is lack of assistance in distribution of technology and other types of development and social-welfare assistance.
- Government's failure to relieve suffering and famine during bad years and government's failure to protect Darfur's population or treat its people equitably are sources of resentment, leading to rebellion.
- "Failed nomads" and other displaced and asset-less (mostly) males, reduced to wage laborers or poor farmers, choose banditry or other violent occupations, which fuel the conflict.
- The economy of conflict and war fuels more violence.

In sum, bad government is the main source of violence and famine. Although drought triggered the 1984–1985 famine, which then undermined the old order, the subsequent causal links are political, pointing to bad governance, compounded by foreign invasions and influence, principally from Chad. De Waal, since his 1984 observations, had always hoped that the decisions made by local Darfurian households would somehow result in resilience, but this was not to be the case. The combination of government neglect, additional fighting, and the destruction of traditional communities and authority structures, were all implicated in the demise.

In responses to this blog, others add to the list of non-climate-change factors in this conflict. Natural process like climate change cannot explain the dehumanization and extreme brutality (Thomas O'Brien). In multi-causal conflict situations, it is important to identify conflict factors on which one can take action. Michelle Body (defending her colleague, Homer-Dixon) asserts that experts need to concentrate on identifying solutions that can be applied in a number of different causal situations. After having blamed the government, one must move

on to find sources of resilience in communities, as well as other social-institutional responses, which may be different from a government response.

In still other cases, concern about desertification, droughts, and climate change in Darfur suggest “diversionary” tactics, such as when “climate change” as the cause of conflict in Darfur was used selectively by UN Secretary-General Ban as a way to remove attention from the political sources of suffering and unrest.¹⁸⁵ The timing coincided with Sudanese President al-Bashir’s indictment by the International Criminal Court. But, then again, he is heir to a historic line of UN assertions regarding the climate-change, population, and environment nexus causes of suffering, famine, and conflict, including Boutros Boutros-Ghali and Kofi Annan (see Box 1).

Among political scientists modeling peace and conflict processes, Scheffran (2009) has begun to model the impact of climate change in Darfur, arguing that climate change has already affected this conflict. Methodically taking into account the historical outcomes, he works backward to identify the agents of conflict – farmers, herders, combatants working on behalf of particular groups of farmers or herders, *Janjaweed* militias, additional agents of the Sudanese government, aid organizations, and others¹⁸⁶ (see also, Cho¹⁸⁷). The model then introduces terms for interactions among agents, based on factors that they cite as intrinsic drivers and motivators versus barriers to violent confrontations. However, like most of the “peace” research models, it is not clear how such a model, designed by bioenergy researchers, effectively integrates economics, politics, climate change, emotional motivations of actors, and other individual factors.

Finally, Darfur showcases the frustrating experience of humanitarians in conflict zones. Efforts there unfortunately are a good example of the truism that humanitarian interventions may squelch violence, remove barriers to livelihood and nutrition, and save lives, but when underlying tensions remain unresolved, and there is no construction of trust-building facts on the ground, humanitarian interventions may simply postpone further conflict, not build peace.

185. Ban, “A Climate Culprit in Darfur” (1997).

186. J. Scheffran, “Climate Change, Social Stress, and Violent Conflict: State of the Art and Research Needs” (2009): www.klimacampus.de/fileadmin/campus-intern/dokumente/Veranstaltungen/Conference_Climate_Conflict_Call_for_Papers.pdf.

187. A. Cho, “Ourselves and Our Interactions: The Ultimate Physics Problem?” *Science* 325 (2009): 406.

Ethiopia

Ethiopia's conflict potential under scenarios of climate change is tied to those of surrounding nations, especially co-riparians, Sudan and Egypt, who share the Nile, and the rest of the politically-volatile states that make up the conflict-prone Horn of Africa, Arabian Peninsula, and Middle East. All are and are predicted to be increasingly affected by El Niño-Southern Oscillation (ENSO) cycles, with attendant shifts in weather patterns, especially changes in the timing and quantity of rainfall. This promises huge disruptions in land-based livelihoods and water regimes across the region, which is already highly unstable politically. Curiously, "climate change," which is a powerful part of the discourse of conflict causality in Sudan (e.g., Ban Ki-Moon¹⁸⁸) is evoked far less in Ethiopia, where historical PGER-based conflicts, aggravated by weather conditions featuring killing droughts and floods, have been sources of chronic agricultural underproduction, food insecurity, and political violence.

Apart from the historic fault lines of colonialism and post-colonial civil wars (notably in Eritrea), horizontal inequalities, featuring PGER divisions, persist, but tend to be underplayed by the US and other donor governments, and also by the NGOs that implement programs in Ethiopia. In the 2000s, these food-security agents and agencies tended not to blame the government for the extent of agricultural underproduction, food insecurity, and human suffering or for skewing food-security safety nets and other resources toward their own PGER affiliates.¹⁸⁹ New agricultural strategies and safety net programs are rationalized in terms of the interactive challenges of environmental stressors and population growth, but less climate change or political discrimination. Thus, Ethiopia is conceptualized by the international community as natural-disaster prone (especially droughts and floods), although history suggests it is equally political-disaster prone, as Haile Selassie's imperial regime, and then Mengistu Hailemariam's socialist one, both experienced overthrow, with famine as a trigger issue. Ethiopia historically presents an evidence-based case study of the ways hunger can cause violent conflict – with food insecurity both an underlying and trigger issue – and also the way the political dimensions of conflict and destructiveness linger to create food insecurity in subsequent generations.¹⁹⁰

Historically, analysts need also to consider PGER and the different livelihood strategies that are rapidly being undermined by combinations of ecological, political-economic, and cultural modernization factors, especially conflict-prone

188. Ban, "A Climate Culprit in Darfur" (1997).

189. T.J. Marchione, ed., *Scaling Up, Scaling Down: Overcoming Malnutrition in Developing Countries* (Amsterdam, The Netherlands: Gordon & Breach, 1999).

190. Messer, Cohen, and D'Costa, "Food From Peace" (1998).

pastoralism versus farming and the interaction of both groups with successive political regimes. Eighty percent of Ethiopia's population still make a living off the land, with the result that most of the population is highly impacted by climate. Population growth in rural areas (less so in cities) creates a kind of "insurmountable challenge" to keep food and livelihood production commensurate. It also presents challenges of competition for land and water between rival uses (and user groups), which now include reforestation, climate change mitigation, and "conservation" functions.¹⁹¹ It is not unrealistic for "climate change" and mitigation experts to suggest that the future of climate change resilience in Ethiopia must lie outside of agricultural occupations.

Alternatively, scale up in maize production, problematically associated with increasing prevalence of malaria¹⁹², and proposals to scale up production of other niche crops, such as teff as a health food (e.g., BOSTID¹⁹³), suggest variable agricultural outcomes. So do foreign investments in Ethiopian agriculture ("land grabs"), which promise more output while employing fewer Ethiopians on their traditional lands (e.g., Rice¹⁹⁴). Recent improvements in dissemination of weather forecasting and market information, using cell-phone and internet technologies, and experimenting with various forms of crop insurance are some of the additional changes to land-based livelihood contexts that could heighten or dampen competition and conflict.¹⁹⁵ In all these cases, it is unwise to consider climate change in isolation, as land-based livelihoods will be subject to transformation in response to these multiple forces and drivers.

Economic outlooks for traditional agricultural livelihoods are thus open to change on many fronts, with multiple possible outcomes and impacts. Ethiopia's multi-state conflict-prone regional context, plus an internal PGER history of conflicts, suggest that conflict-potential is high and will be aggravated by climate change, particularly in the direction of lower moisture available for land-based livelihoods overall.

Given its strategic location, Ethiopia's political-geographic concerns have been the subject of considerable international concern, especially for the US and

191. Oxfam International, "The Rain Doesn't Come on Time Anymore: Poverty, Vulnerability, and Climate Variability in Ethiopia" (2010).

192. James McCann, *Maize and Grace: Africa's Encounter with a New World Crop, 1500–2000* (Cambridge, Massachusetts: Harvard University Press, 2005).

193. Board on Science and Technology in International Development (BOSTID), US National Research Council, "Teff," in *Lost Crops of Africa: Volume 1 – Grains*, (Washington, DC: U.S. National Academics Press, 1996).

194. Andrew Rice, "Is There Such a Thing as Agro-Imperialism?" *New York Times Magazine* (Nov. 16, 2009): www.nytimes.com/2009/11/22/magazine/22land-t.html?_r=1.

195. Smith, "War, Peace, and Third World Development" (1994).

European Union, which have poured millions of dollars into safety net programs since 2005. These programs, which distribute food (which was also supposed to be used in food-for-work programs that would build agricultural capacities and assets) and cash to help poor people preserve their assets in the face of shocks, have been criticized for not effectively addressing the root causes of hunger (e.g., Young¹⁹⁶) and for distributing aid among the regions on a basis other than need.¹⁹⁷ In one Ethiopian futures scenario, looking back from 2025, this becomes a permanent social-protection scheme, not a temporary humanitarian program.¹⁹⁸

In recent years, Oxfam America's Horn of Africa Regional Office has carried out important assessments of climate change impacts on Ethiopian farmers, with attention to community-based resilience responses in different agro-climatic zones (Oxfam International 2010). Conclusions from these studies significantly document that (a) climate change is already having impacts, and (b) safety-net programs that also introduce agricultural technological interventions and build on the local knowledge base can make a difference in how people weather the changes. Although the social-resilience/climate response plans reviewed in this project are good ideas in principle, researchers found that they were quite flawed in design and implementation practice. The report documents certain troubling issues related to climate-sensitive changes in land and water management, namely insufficient attention to land and competition issues. Also, any programs favoring more-intense irrigation will heighten the potential for violent conflict considerably and also lower the water table. These form part of innovative actions by the government of Ethiopia to bring together all stakeholders to examine scenarios and consider agricultural, clean energy, and other options for reducing negative impacts of climate change.¹⁹⁹

196. Helen Young, "Ethiopia 2003: Towards a Broader Public Nutrition Approach," *Humanitarian Exchange Magazine* 27 (2004): www.odihpn.org/report.asp?id=2647.

197. T.J. Marchione and E. Messer, "Food Aid and the World Hunger Solution: Why the U.S. Should Use a Human Rights Approach," *Food and Foodways* (2010): 10.

198. Borton, "What Will the Humanitarian System Look Like in 15–20 Years?" (2009).

199. Oxfam International, "Ethiopia: National Forum to Coordinate Action on Climate Change" (2009).

Israel-Palestine

In Israel-Palestine, everyone acknowledges the urgency and constructive possibilities of technological and infrastructural management of water issues, but also the predominance of political factors stalling and blocking their implementation.²⁰⁰ Alongside debates over the best ways to ensure equitable distribution and protection of water resources in shared aquifers and rivers, in contexts of intense national and international political posturing over water rights, are the long-term ecological and climate cycles in progress. Although one reads much about the ways such ENSO cycles may affect riparians along the Nile (e.g., Michel and Pandya²⁰¹), one finds less about the consequences for the rest of the Mediterranean, although shifts in the winds and rains substantially affect the conflict-prone eastern Mediterranean and intermediate islands, such as Cyprus, and also the nearby mainlands of Greece and Turkey, ancient Attica and Anatolia, all places where political well-being is caught up in endless ecological and political cycles of conflict.

Paleo-hydro-geologists point out that these long-term (300 years) weather cycles likely provide the background for ancient migrations, including those recounted in Biblical epochs and epics that describe movements of ancient patriarchs from Mesopotamia into Canaan, then periodically down into Egypt and out again, in response to multiyear killing droughts (see Issar²⁰²). Very recent history also shows how tied into politics water management is; declarations of drought as well as changes in quantity and price of water for agriculture are highly politically charged, and in the case of the modern state of Israel, directly connected to bitterly conflicted but non-violent Labor-Likkud “regime change” in the early 1990s.²⁰³ The world political implications of situations where water stress will lead to harsh political conflicts and political change, even where such outcomes are not “hot” armed violence, require more careful consideration, particularly where such situations will involve political-economic transitions of

200. Karen Assaf et al., “A Proposal for the Development of a Regional Water Master Plan,” Israel-Palestine Centre for Research (1993).

E. Feitelson and M. Haddad, eds., *Management of Shared Groundwater Resources: The Israeli - Palestinian Case with an International Perspective* (Kluwer Academic 2001).

201. D. Michel and A. Pandya, eds., “Troubled Waters: Climate Change, Hydropolitics, and Transboundary Resources,” Stimson Center, Regional Voices: Transnational Challenges Project (2009): http://beta.stimson.org/rv/pdf/Troubled_Waters/Troubled_Waters-Complete.pdf.

202. Issar, *Water Shall Flow From the Rock* (1990).

203. Lees, “Kicking Off the *Kaiko*” (2001).

large segments of national populations out of agriculture and into “who knows what?” Indeed, the case of Israel-Palestine provides a kind of tense laboratory for framing and investigating such questions. Recent history there also illustrates how intentional Israeli government neglect, coupled with Palestinian Authority corruption, failed to regulate criminal elements, especially in West Bank Palestinian society, and so allowed and encouraged violent livelihoods (and in some instances, martyrdom) among hopeless or disaffected Palestinian youths.

Dinar, in a thorough consideration of the politics of water conflict in Israel-Palestine, raises important issues about the embeddedness of existing seeds of conflict in these PGER histories. She quite forcefully and convincingly challenges prevailing international theories of conflict and climate change, including “neo-realist” and “resource scarcity” frameworks, marshalling evidence in favor of “identity”-based conflicts.²⁰⁴ Here, politics must be negotiated in order to avoid additional conflict over environmental resource scarcities that can be reasonably conceptualized economically in terms of relative deprivation. These political terms of analysis are relevant in parts of Sudan and Ethiopia, where there are or will soon be multigenerational narratives of hostilities and relative deprivations, and where elders who have traditionally negotiated conflicts with wisdom may be dying out.

Whereas some in the Israeli theater of conflict await a new generation of political leadership on both sides, which can move forward to peace because the new leaders have been less scarred by and wedded to war, the Sudanese and Ethiopian cases threaten an end to traditional peacemaking, with no sign that new forms of leadership are taking their place. Because the majority use of managed water is in irrigated agriculture, governments in all affected countries will have to make hard choices and tradeoffs regarding allocations, which will affect land-based livelihoods, household and community incomes, and food security (see, e.g., Beaumont²⁰⁵).

Bangladesh

Bangladesh is the world’s most densely populated country. No one doubts that this low-lying, sea-surrounded, conflict-prone country will be subject to

204. Shlomi Dinar, “The Israeli-Palestinian Water Conflict and Its Resolution: A View through International Relations Theory,” paper presented at the 40th Annual Convention of the International Studies Association, Washington DC, (February 16–20, 1999): www.ciaonet.org/isa/dis01/.

Shlomi Dinar, *International Water Treaties: Negotiation and Cooperation Along Transboundary Rivers* (New York: Routledge, 2008).

205. Peter Beaumont, “The Myth of Water Wars and the Future of Irrigated Agriculture in the Middle East,” *International Journal of Water Resources Development* 10, 1 (1994): 9.

increasingly violent and destructive storms and floods under scenarios of climate change. Inundations could cut the country into thirds, significantly reduce land area available for habitation and agriculture, and also pollute waterways, reducing safe drinking water supplies and impacting fishing. All results of inundations would aggravate landlessness, displace millions of people, and spike migration within and beyond Bangladeshi borders. Mahabub Hossain, executive director of Bangladesh-based BRAC, the world's largest NGO, presented some idea of the scale of projected damage: A one-meter rise in sea level will inundate 17 percent of the land and contaminate water sources. Flooding would potentially displace 15 million people.²⁰⁶ Country planners know that people will also have to find ways to channel monsoon rains, which are vital for crops; construct investments in water management for fisheries, which will otherwise be destroyed by inundations and pollution; and construct superior infrastructure for habitations, as well as for early warning and response to an urgent need to retreat to higher and safer ground.

Planning is essential, but it is not clear who will take responsibility within Bangladesh, which has an impressive history of large-scale, ambitious nongovernmental economic and social development and activities, such as BRAC and the Grameen Bank, alongside government actions, which are frequently beset by corruption.²⁰⁷ Coordinating activities with outsider agencies and sources of funding will present additional challenges.

External migration is one chief concern of these international agencies, whose estimates show that some 250,000 Bangladeshi already migrate each year, mostly to neighboring Indian states or the Middle East, where they compete with other low-income individuals and ethnic groups for livelihoods.²⁰⁸ These numbers are anticipated to rise with population growth – which is predicted to be substantial, even with concerted population planning – and also with additional climate-change-mediated challenges to fisheries and agricultural livelihoods.

Agricultural and fishing populations, in particular, on the move in response to demographic, economic, and environmental challenges, as well as to corrupt political policies and breakdown in rule of law, are associated with violence.²⁰⁹ Homer Dixon documented that Bangladeshi environmental migrants in the 1980s

206. IFPRI, "Climate Change, Adaptation, and Poverty" (2009).

207. This is extensively documented on the website of Transparency International's Bangladesh chapter: www.ti-bangladesh.org/.

208. IOM, "Training Manual on Safe Migration" (October 10, 2005): www.banglarights.net/news_and_issues.php?parent_id=10.

209. R. Reuveny, "Ecomigration and Violent Conflict: Case Studies and Public Policy Implications," *Human Ecology*, 36 (2008): 1–13.

provoked violence in the Indian states West Bengal, Assam, and Tripura, which were already violence-prone, while internal migrants from rural and coastal areas provoked violence in the 1980s and 1990s, especially in the Chittagong Hill tracts, where they competed for land and other resources with disadvantaged native populations, who suffered extreme poverty and discrimination.²¹⁰ These accounts, referring to reports by Lee²¹¹ and Shelley,²¹² are widely cited in peer-reviewed articles discussing the evidence for environmental links to conflict. The CCCC discourse then predicts that existing conflict is likely to be aggravated by migrations predicted under scenarios of climate change.

Even without devastating climate change, factors connected to population growth and environmental degradation have led to internal displacements and violent clashes, especially with indigenous residents in the Chittagong Hills tract, who are mired in poverty and claim discrimination. External displacements are also associated with violent conflict, as Bangladeshis enter into neighboring Indian states, which are also fractious and conflict-prone. In the latter context, India has constructed a security fence and employed larger border security forces to try to keep out Bangladeshis, with their associated political unrest.²¹³ These situations of internally and externally displaced Bangladeshis are hazardous and precarious and show no signs of amelioration, because there is such a low proportion of workers in the formal sector and little prospect that some larger proportion of prime-age workers will find work that pays a regular wage that can support younger and older family members, or support a state's tax base.²¹⁴ Economic downturns across the world's economies are also worsening the current situation and outlook.²¹⁵

Although mitigation efforts have included better cyclone warning systems and construction of multipurpose cyclone shelters, crop adjustments (more fish and seafood production, and salt-tolerant plant species and varieties), building new dikes, a national water management plan, water filters to keep out killing salts that would poison crops and destroy clean water for human consumption, and investments in low-cost compact housing on carefully selected higher ground, the outlook is daunting. Bangladesh's General Muniruzzaman, speaking on an International Institute for Strategic Studies military panel on climate change and

210. Homer-Dixon, *Environment, Scarcity, and Violence* (1999).

211. S.W. Lee, *Environmental Matters: Conflict, Refugee, and International Relations* (Tokyo: World Human Development Institute Press, 2001).

212. M.R. Shelley, *The Chittagong Hill Tracts of Bangladesh: The Untold Story* (Dhaka, Bangladesh: Center for Development Research, 1992).

213. C. Haub, "Demographic Trends and their Humanitarian Impacts," FIC, Humanitarian Horizons Project (2009): <https://wikis.uit.tufts.edu/confluence/display/FIC/Demographic+Trends+and+their+Humanitarian+Impacts>.

214. Ibid.

215. Ibid.

security issues,²¹⁶ indicated that the Bangladesh military has begun to plan for disruptions but that more planning is needed (whether due to lack of time or direction, the summary of this speaker's remarks said nothing about networking with NGOs or community-based organizations).

Situated so precariously, both geographically and politically, Bangladeshis experiencing economic privations under devastating natural and political conditions also attract significant attention from the media, which construct powerful human-interest stories around their human suffering. One *Environment & Energy Daily* series described the circumstances that force Bangladeshis out of deplorable conditions in flooded coastal or miserable urban (Dacca) areas and into neighboring India, where potential for violence escalates. This journalist account profiled fisherfolk who had been forced to leave flooded homes, where fish had disappeared and rice fields had been destroyed by cyclones, and where harvesting shrimp provided only a meager alternative livelihood.²¹⁷ The scenario of "forced migration," where people sense they have no choices except to move, is already happening in the face of "unprecedented" reductions in inhabitable land and livelihoods. In addition to this asserted outlook on migration at unprecedented scale, the article contains vivid word imagery, paraphrasing provocative utterances attributed to authoritative sources:

[A] growing body of evidence, including analyses of military experts in the US and Europe, supports the estimate that by mid-century, climate change will make vast parts of Africa and Asia uninhabitable. Analysts say it could trigger a migration the size of which the world has never seen....

[A]ccording to the IPCC [Intergovernmental Panel on Climate Change], a minimum of 207 million people in Latin America, Asia, and Africa will not have enough water inside of a decade. In Asia, an extra 130 million people will be at risk of hunger by the middle of the century. By 2100, crop revenues in Africa will drop by 90 percent. And scientists see Bangladesh as ground zero.

The article also notes that by 2050, the total number of climate migrants will be "250 million people," which it says is a "population almost that of the entire US."

According to this account, migration will change the face of the world, as ordinary struggles of poor people, who live on less than \$1 a day, will become the extraordinary struggles of internally displaced persons, especially in urban areas, where in-migration will outpace jobs and infrastructural services.

216. International Institute for Strategic Studies (IISS), "Defining Global Security in the 21st Century: The Global Security Implications of Climate Change," IISS Transatlantic Dialogue on Climate Change and Security (May 5, 2009): www.iiiss.org/about-us/offices/washington/iiiss-us-events/iiiss-us-conference-defining-global-security-in-the-21-century/.

217. Friedman, "Bangladesh: Where the Climate Exodus Begins" (2009).

The article also cites “military” sources predicting an upsurge in violence and conflict, as people in motion compete for jobs and resources. It indicates that the US worries that governments, especially in potentially climate-stressed and politically volatile countries, such as Bangladesh, Indonesia, and the Philippines, will be less able to counter terrorist threats under these circumstances.²¹⁸

Koko Warner of the UN University Environmental Migration, Social Vulnerability, and Adaptation Section is another key voice cited by Friedman and other media sources on this topic.²¹⁹ Water specialist Khawaja Minnatullah, at the World Bank’s Dhaka office, who also predicts that inundations of coastal areas will provoke political mayhem and adds that there is no way emissions cap-and-trade will dampen this cycle, is also cited.

Media thrive on sensationalist, emotion-driven, and simplifying accounts. It would be overly complex to note that development of thus far underdeveloped water systems in urban areas could change these metrics and outlooks. For a comparable figure, one can think of China’s relaxation of internal non-migration policy with the ramping up of its “responsibility” system. The number who might be moving in search of livelihoods in 1988 was 44 to 88 million. “The poor don’t have anywhere to go,” say CCCC proponents. But the *Environment & Energy Daily* article also does not mention how BRAC and other large-scale community-based-network efforts, which are planning and taking action, might change these scenarios. Sounding a more constructive note, Ainun Nishat, the World Conservation Union’s Bangladesh representative, says that he is skeptical of these migration predictions. He would like to see everyone spending more time and resources on immediate action, like infrastructure improvement, cyclone shelters, improved flood warning systems, and a food security build-up.²²⁰

In summary, there is broad agreement among sources that climate change poses a powerful threat to Bangladesh and its neighbors. This threat includes not only year-to-year and cumulative weather-related damages to natural resources and livelihoods dependent on land and water resources, but also to political stability. If nothing is done to diversify the livelihood outlook, construct housing and infrastructure that can withstand fiercer storms and water damage, and improve water management systems to ensure accessible, reliable, and more-equitable distribution, then the outlook is surely social displacement and migrations at increasing scale. And in both internal (e.g., Chittagong Hills) and external (India)

218. Paul J. Smith, “Climate Change, Weak States, and the ‘War on Terrorism’ in South and Southeast Asia,” *Contemporary Southeast Asia* 29, 2 (2007): 264.

219. Friedman, “Bangladesh: Where the Climate Exodus Begins” (2009).

220. Ibid.

places where violence is already a problem, such increasing population movements and concentrations and competition for livelihood resources, housing, and public services are sure recipes for more violence and conflict. Yet actions in the directions of adaptation and mitigation, especially superior infrastructure, could curtail damages and redirect energies in more-constructive directions. Support for efforts such as BRAC's could change the trajectory from scaled-up displacement, violence, and conflict to constructive actions, led by militants for peace.

Humanitarians in such situations, as they already are doing, need to think creatively about disaster risk reduction, which includes livelihood security and conflict-transformation strategies. BRAC leadership and institutions provide an important set of role models for hopeful, peaceful, constructive development that do not necessarily characterize some comparable African situations, which are facing analogous demographic, livelihood, political, and now climate change challenges as they shape their futures. In all these cases, education, civil-society inclusion of females, and reduction in horizontal inequalities disfavoring deprived PGER groups in social-protection and improvement programs could go far to reduce conflict and conflict-potential.

Changes in the humanitarian system

Conceptual changes

Key changes occurring in humanitarian thinking include a shift to addressing causes, not just consequences, of climate change, although the positive construct, emphasizing construction of “resilience” suggests these are joined in the cycle of causation and coping. Examples of the new foci include:

- Resilience for prevention, mitigation, adaptation. For example, the Hyogo Framework for Action on disaster risk reduction (DRR) has as its theme building resilience of nations and communities to disaster.²²¹
- Asset-based approaches to poverty-reduction strategies, featuring creation of and more-equitable access to livelihood products that also contribute to food, health, and environment across a wide range of food and agricultural systems (e.g., Carter and Barrett).²²²
- Social protection programs and policies as a way to prevent destitution and devastation. For example, visioning exercises foresee a time in the not too distant future when response to more-severe cycles of (Ethiopian) drought will be met by permanent social protection programs that build capacities, provide employment, and generate household income, all “prevention” as well as response measures.²²³
- Multiple “responsive-preventive” action in specific country case studies. For example, action in Bangladesh by BRAC and in the Philippines by the Federation of Free Farmers Cooperatives.
- Disaster risk management and reduction as a primary scope of action connecting humanitarian and development assistance. For example, Oxfam America’s DRR work.²²⁴ Also see the discussion in Barrett and Maxwell²²⁵ on

221. UNISDR, “Hyogo Framework for Action, 2005–2015” (2005).

222. M.R Carter and C.B. Barrett, “The Economics of Poverty Traps and Persistent Poverty: An Asset-Based Approach,” *Journal of Development Studies*, 42:2 (2006): 178.

223. Borton, “What Will the Humanitarian System Look Like in 15–20 Years?” (2009).

224. Oxfam America, “Disaster Risk Reduction Strategic Framework, 2008–2012” (2009).

225. C.B. Barrett and D. Maxwell, *Food Aid After Fifty Years: Recasting its Role* (New York: Routledge 2005): 119–121 and Chapter 10.

humanitarian assistance, development assistance, and appropriate usage of safety nets and cargo nets.

Overall, these new frameworks raise challenges of defining humanitarian roles and institutional agendas and overlap with development and human rights advocacy organizations. With respect to this context, reports from the Humanitarian Horizons project, coordinated by the Feinstein International Center (FIC) at Tufts University, raise pointed questions about the politics of humanitarian aid, particularly as it has been linked to complex crises such as Darfur, in which the government of Sudan, the insurgents, and international donors all have competing agendas, which interfere with traditional nonpolitical concepts of humanitarian assistance.

Key strategic considerations for international nongovernmental organizations (NGOs) in this conceptual environment are (1) whether they (including their international nodes and networks) can learn to work with climate modelers to contribute to mitigation and adaptation; (2) if they can learn to work more effectively with subnational agencies in fragile states; (3) how, through grassroots advocacy and national lobbying, they can have an impact on sustainable lifestyles at home in all states; and (4) whether to emphasize gloom and doom (fear) or education for preparedness (empowerment), or how productively to combine them.

NGOs are part of the “new global public management regime,” which will respond to humanitarian crises in the future. Strategic actions emphasize partnerships, which connect grassroots agents to markets and policymakers at multiple levels. These social-political process or connectedness goals differ from the measurable indicators favored in conventional or traditional approaches that value operations in terms of logistical efficiency and direct numbers of clients served or materials distributed. Yet they also stress tie-ins to the Millennium Development Goals (MDGs), with their broad and specific objectives of poverty reduction (which must include disaster preparedness components) and to human rights, justice, and environmental sustainability efforts as the “good side of globalization” (summarized in FIC²²⁶; see also Messer and Cohen²²⁷).

Modeling climate change and conflict

Climate security, since the 2007 IPCC report, is a new field, being taken increasingly seriously by high UN officials and their agents. But it is not yet a major “humanitarian” field of interest because humanitarians, who respond in

226. FIC, “Ambiguity and Change” (2004).

227. Messer and Cohen, “Conflict, Food Insecurity, and Globalization” (2007).

immediate time frames, find it difficult to use 100-year scenarios modeled by climate scientists.²²⁸

Institutional developments include a new “climate change and security” institute at the Klima Campus of the University of Hamburg. Its mission and agenda represent the cutting edge of the development of the concept of “securitization of climate,” which builds on ever more complex networking models. The suggested topics for the institute’s 2009 conference, “Climate Change, Social Stress, and Violent Conflict: State of the Art and Research Needs,” read very much like the terms of reference for this literature review.²²⁹

The Climate Change, Environment, and Migration Alliance also is working to bring the “climate change” and humanitarian communities into dialogue (see Bogardi and Warner²³⁰), which could include humanitarians working with demographic modelers, especially those trying to understand factors underlying different kinds of migration (see summary in Kniveton²³¹; also Hamza²³²).

Additionally, the FIC Humanitarian Horizons project models professional humanitarian institutional response to increasingly complex climate disasters. The leading partner in this exercise, which was carried out in 2008–2009, is the Humanitarian Futures Program of Kings College, London. The synthesis of futures research and projections have been funded by a consortium of NGOs, including Catholic Relief Services, the International Rescue Committee, Mercy Corps, Oxfam America, World Vision Australia, World Vision Canada, and World Vision International (Humanitarian Horizons²³³).

Working with subnational agents of disaster response and prevention

Humanitarians with long-term experience and perspectives emphasize that their colleagues must learn to be more respectful of religious motivations, grounding, principles, and leadership. Instead of viewing such intentionally cultural and political interests as “competition,” they should find places where they overlap and can work together and learn how to avoid partnership-ending frictions

228. Personal Communication, Peter Walker, Director of FIC.

229. Scheffran, “Climate Change, Social Stress, and Violent Conflict” (2009).

230. J. Bogardi and K. Warner, “Here Comes the Flood.” *Nature Reports Climate Change* (2008): www.nature.com/climate/2009/0901/full/climate.2008.138.html.

231. D. Kniveton, “Triggers/Drivers,” 2nd Expert Workshop on Climate Change, Environment, and Migration,” Munich, Germany (July 23–24, 2009): www.efmsv2008.org/vfs/documents/MunichWSSyllabus2009_post?menu=39.

232. M. Hamza, “Climate Change and Human Consequences: Bridging the Data-Policy Gap,” 2nd Expert Workshop on Climate Change, Environment, and Migration,” Munich, Germany (July 23–24, 2009): www.efmsv2008.org/vfs/documents/MunichWSSyllabus2009_post?menu=39.

233. Humanitarian Relief Initiative meeting Executive Summary, World Economic Forum, Geneva (April 22, 2009): <http://onerresponse.info/GlobalClusters/Pages/Global%20Capacity%20Building%20information.aspx>.

where they substantively disagree (e.g., over whom to assist when populations in need of assistance contain internal cultural and gender diversity). External humanitarians also need to learn when to leave, in the interest of self-reliance and letting groups assume self-reliance through community organizations. The multiple concerns here are productive working relationships, sustainable ends to crises, and avoidance of what Minear and colleagues described almost two decades ago as “Humanitarianism Under Siege.”²³⁴

Another area for new humanitarian operations concerns negotiation of relocation of communities threatened by climate change. Various workshops discussing governance structures and institutions have concluded that human rights frameworks need to be in place to protect (whole) communities that are forced to move in response to inundation or other environmental threats linked to climate change (e.g., Bronen²³⁵). NGOs such as Oxfam America and Oxfam Great Britain have experience that could help them help communities negotiate these new terms of existence, including land holding, economic access to resources, social-welfare programs, and related functions. Interestingly, the more-technical papers on forced migration (due to environmental or economic stress) do not address conflict; instead they focus on ways to ensure rights and avoid vulnerability. Perhaps this is because historically those forced to move may already be fleeing conflict, especially in sub-Saharan Africa (SSA) (see Bronen²³⁶).

Sustainable lifestyles at home

Promoting sustainable lifestyles at home means actively lobbying for a “green” agenda in individual and household consumption and energy policies at all levels of civil society and government in the home-base country. By focusing on the positive behavioral change promoting the common interest of “Earth Security,” advocates can avoid the ethical dilemmas of preaching to human-rights-violating governments and other politically objectionable agents of change, while ignoring unsustainable behaviors and practices closer to home.

Doom and gloom versus constructive scenario-building

For NGOs, which have a comparative advantage in constructive working partnerships with communities the world over, it is probably best to leave the gloom and doom scenarios to others and to concentrate on the positive, which

234. L. Minear et al., *Humanitarianism Under Siege: A Critical Review of Operation Lifeline Sudan* (Trenton, New Jersey: Red Sea Press for Bread for the World Institute, 1991).

235. R. Bronen, “Climate-Induced Relocation Research Strategy,” 2nd Expert Workshop on Climate Change, Environment, and Migration, Munich, Germany (July 23–24, 2009): www.efmsv2008.org/vfs/documents/MunichWSSyllabus2009_post?menu=39. 2008 (accessed 10 September 2009).

236. Ibid.

includes cooperation and community-capacity building. NGOs can contribute to building positive national awareness, which contributes to sustainable behavioral change and healthy life styles, by making available and highlighting useful information, especially through the World Wide Web and careful media releases. One German effort since 2005 to establish and support a web-based information portal on Environment, Conflict, and Cooperation²³⁷ tries to increase awareness and support actions for climate change, but also considers the positive along with the negative. This might be an example to study and assess and, if successful, emulate in new contexts.

Normative principles, calculations of costs, and accountability

Although accountability increasingly favors exact calculations of costs and benefits of various operations, ecological, economic, political, and interrelated costs remain open questions for which there are few data or historical case studies on which to base projections. Ethically, it is difficult to put numbers on the “costs” of deaths, displacements, and migration (one could cite the dilemmas of “costing” deaths in the Bhopal and World Trade Center disasters, which were attempted in the interest of calculating compensation to families). Thus far, studies indicate that regional responses to different types of disasters are selective, judged on the basis of financial outlays per capita; but so are needs, which also might take into account whether there is local response capacity and how sustainable such immediate response might be.

Some countries already are making good social-political investments in preparedness, for example, superior early warning systems (Bangladesh), storm-resistant housing (Philippines), and heightened public awareness (Honduras). But there do not yet exist good calculations of the costs of suffering (or suffering prevented) by investing in prevention of major disasters, such as dam or sea wall collapse in large, populous Asian nations (these positions are reviewed in Webster et al.²³⁸).

Since 1994 there has been an attempt on the part of the humanitarian community to put humanitarian assistance on a more principled and professional basis. Along with these minimum standards (for food, medicine, shelter) and (rights-based) principles (the Sphere Project “Humanitarian Charter and Minimum

237. Environment, Conflict, and Cooperation:
www.ecc-platform.org/index.php?option=com_content&task=view&id=38&Itemid=95.

238. Bronen, “Climate-Induced Relocation Research” (2009).

Standards in Disaster Response”²³⁹), the humanitarian community has experienced a shift to more-rigorous cost (benefit) accounting, along legalistic and business lines. Positively, this means more attention to and oversight of program effectiveness, which should facilitate more-efficient use of humanitarian aid resources in the future and prevent embarrassing humanitarian episodes (including “waste”), like the unwieldy Western response to the 1994 Rwandan genocide. Negatively, such calculations may jeopardize applications or appreciation of other principles, including “health and human rights”²⁴⁰ or additional social-cultural values, such as generosity (in widespread unofficial response to Hurricane Katrina) and witnessing for peace,²⁴¹ which give sufferers hope that is not easily accommodated within a cost-benefit equation. The “added value” of such value-based behavior, furthermore, cannot be accounted adequately within the current humanitarian metrics. Operations such as Oxfam America’s DRR try to do both: support more businesslike operations, monitoring, and evaluation while maintaining its “rights-based” identity and program emphasis.²⁴²

Existing accounting norms and calculations also separate “humanitarian assistance” provided by external donor organizations (NGOs) from local efforts at prevention and response, which may be linked to various sources of income and investment, including foreign (diaspora) remittances. These local sources are central to “self-reliant” capacity for prevention and response; they are not, strictly speaking, “humanitarian assistance.” Some humanitarians belabor the paradoxical theme that “Western” humanitarians tend to undercount or ignore such local, and principally “non-Western,” contributions to resilience; they also bemoan the (self-evident) findings that humanitarian aid that is measured is primarily Western (e.g., FIC;²⁴³ Donini et al²⁴⁴; FIC²⁴⁵). Unfortunately, such calculations and principled self-criticisms on the part of humanitarians do not help answer the more important question: Through what approaches can humanitarians, especially external transnational humanitarians, best contribute to building local self-reliant capacities and resilience?

239. The Sphere Project: www.sphereproject.org.

240. Paul Farmer, “Pathologies of Power: Rethinking Health and Human Rights,” *American Journal of Public Health* 89, 10 (1999): 1486.

241. V. Sanford and A. Angel-Ajani, eds., *Engaged Observer: Anthropology, Advocacy and Activism* (New Brunswick: Rutgers University Press, 2006).

242. Oxfam America, “Disaster Risk Reduction Strategic Framework, 2008–2012” (2009).

243. FIC, “Ambiguity and Change” (2004).

244. A. Donini et al., “Mapping the Security Environment: Understanding the Perceptions of Local Communities, Peace Support Operations, and Assistance Agencies,” Feinstein International Famine Center (2005).

245. Antonio Donini et al., “Humanitarian Agenda 2015: The State of the Humanitarian Enterprise,” FIC (March 2008).

In addition, what some might call “waste” and “inefficiencies” (e.g., of duplicate efforts in early warning systems) sometimes reflect the political concerns of different agencies. The “negative” that multiple agencies compete for scarce funding for similar tasks masks a possible positive, that multiple agencies, with different political sponsors, may improve coverage of all vulnerable groups, some of whom might be left out of coverage by any single agency with restricted political interests.

Cost-benefit calculations of “efficiency” also are likely to carry risks of excluding local agents who do not conform to international organizations’ terms of reference in operational monitoring. Thus, one could anticipate situations replicating Harrell-Bond’s scathing critique of the treatment of Sudanese refugees in Uganda.²⁴⁶

Finally, the “cluster approach,” favored by humanitarians to improve coordination and efficiencies, are all donor categories, aimed at the concerns of funders (“investors”), not those who are supposed to benefit from programs (“workers,” “clients”). Professional cultural politics are starkly evident in the separate clusters of agriculture, nutrition, and health—but not (in the original group) “food” or “energy,” which one might anticipate are major categories of concern for internally displaced persons, for example. One also might have expected a cluster on “political voice” (governance), a dimension acknowledging how people organize to express concerns.

Guidelines and voluntary codes of conduct have been proliferating to advance “accountability” among both nonprofit NGOs and nonprofit foundation arms of for-profit business firms, as well as for-profit corporations as entities. But so far there has been little effort at good leadership-led coordination in specific situations of humanitarian assistance. This is in contrast to some remarkable efforts in human rights advocacy, where the human-rights NGO Global Exchange, along with child rights and labor rights NGOs, managed to bring governments, NGOs, UN agencies, and businesses to the table to negotiate better conditions and standards of child agricultural labor. Humanitarian NGOs might ponder whether such successful networking and coordination of actions provides a model. The UN Office for the Coordination of Humanitarian Affairs (OCHA) has the role of coordinating response activities of UN agencies and others. But are its resources adequate to the task? What other agents and agencies might be required? And are NGOs, who have made a great start in their Humanitarian Horizons project,²⁴⁷ ready to take coordinated actions?

246. B. Harrell-Bond, *Imposing Aid: Emergency Assistance to Refugees* (Oxford: Oxford University Press, 1986).

247. FIC, “Humanitarian Horizons: A Practitioners’ Guide to the Future” (January 2010): <https://wikis.uit.tufts.edu/confluence/download/attachments/33414740/Practitioners-Guide-Future.pdf?version=1>.

The “Peace and Conflict Impact Assessment (PCIA) Handbook” (Conflict Prevention and Post-Conflict Reconstruction Network, 2005) directs NGOs working in conflict zones not to make things worse; for example, to avoid working with state institutions (also non-state institutions) that steal assets. They should also try to find ways to integrate peacebuilding into development activities. But another large challenge, for which there are exceptionally few “guidelines,” especially in post-conflict situations, is to merge different institutional interests and working cultures.

In post-conflict zones especially, NGOs, militaries, government agencies, and other internal and external actors all operate, usually in separate teams, each with different strategic interests, work styles, and humanitarian versus development aims (see, e.g., Duffield²⁴⁸). Such diversity creates an impasse that climate change and security advocates will need to overcome (e.g., Smith and Vivekenanda²⁴⁹). Another key factor in effective climate change response involves people’s participation, which looms especially large in Smith and Vivekenanda’s prospectus.²⁵⁰ In their opinion, humanitarians have obligations not only to think through climate change, but also to make sure that this information is available to local people so that they have information to make decisions and a voice in adaptation-mitigation decision making processes.

Overall, humanitarians envisioning scenarios on Humanitarian Horizons worry that demand for humanitarian assistance is increasing, along with additional pressures to serve donors’ political agendas, but without sufficient attention to subnational operational agendas.²⁵¹ Specifically, researchers at FIC worry, “Many mainstream humanitarian agencies have been drawn implicitly or explicitly into the service of political agendas.”²⁵² FIC’s team questions whether, under these circumstances, all can be considered part of the same “humanitarian” movement. These authors also lament that “much that is local and non-Western in humanitarian action goes unrecognized: the coping mechanisms of communities, the parallel lifesaving universe that includes zakat, migration, and remittances.” However, the latter is a rather odd way to conceptualize the problem, in that external humanitarians generally enter where such local capacities are overwhelmed, or where joint actions have been negotiated to be inclusive, while

248. M. Duffield, *Global Governance and the New Wars: The Merging of Development and Security* (London: Zed Books, 2001).

249. Smith and Vivekenanda, “A Climate of Conflict” (2007).

250. Ibid.

251. FIC, “Ambiguity and Change” (2004).

252. Donini et al., “Humanitarian Agenda 2015” (2008).

valuing a division of labor (e.g., during the opening years of Operation Lifeline Sudan; see Minear et al.²⁵³).

The Humanitarian Horizons papers offer multiple examples of the ways climate change alarmists and humanitarians are conceptualizing future challenges. Not surprisingly, these US and UK security agencies' visioning exercises, with their distinct future scenario building, are elite processes. As part of the research agenda, it would be desirable to have more balanced and comparative grassroots views, which surely exist in the visioning exercises of grassroots and grassroots umbrella agencies.

In sum, humanitarians spend increasing amounts of time, effort, and resources crafting norms and codes of conduct and responding to their "identity crisis" (humanitarian typology exercises) for what is an expanding multibillion dollar business, where the business of not taking political sides is also a political stance. But these efforts may be losing sight of the overall goal, which is self-reliant prevention and response capacities on the parts of grassroots communities and other social-response agents, particularly in developing countries.

Along these lines, it would be useful to see case studies of "scaling up" of humanitarian efforts (size, budget expenditures, functions, political networking, and organizational connections) to conceptualize the options and their relative advantages or disadvantages (see essays in Marchione's volume on malnutrition, especially the chapter by Uvin²⁵⁴).

Institutional outlooks

Borton has exhaustively reviewed definitions and future outlooks for the international humanitarian system,²⁵⁵ following but also elaborating on Walker's and Maxwell's four principal components: (1) subsets of the country's aid structures, (2) multilateral organizations, (3) Red Cross and Red Crescent Movement, and (4) structured groups of private citizens, including community-based organizations (that tend to arise from communities in or at risk of crisis) and NGOs (that may be international, national, multi-community, and variously partnered and networked).²⁵⁶

253. Minear et al., *Humanitarianism Under Siege* (1991).

254. Marchione, *Scaling Up, Scaling Down* (1999).

255. Borton, "What Will the Humanitarian System Look Like in 15–20 Years?" (2009).

256. P. Walker and D. Maxwell, *Shaping the Humanitarian World* (Routledge, 2009).

He anticipates an emergent clash between traditional (“fundamentalist”) humanitarianism – which was self-consciously and by definition antipolitical, neutral, and impartial in delivery of aid in disaster situations – and the “so-called new humanitarianism” – which actively engages political actors in its efforts to avert crisis. Possible compromises on the old humanitarian principles and values include managing humanitarian (disaster preparedness) activities within development activities (a savvier framing to the old “relief to development” continuum), reliance on government or intergovernmental organization (IGO) funding (not really new at all, but more intentionally aligned with donor government political interests), and more-constructive partnerships with governments in affected countries, including involvement with militaries, which are increasingly players in disaster response-prevention.

Military humanitarianism

Military humanitarianism, or humanitarian-tasked “security forces,” are mentioned often as the most likely “solution” to climate change insults in most developing countries, because the military are the main institutional force capable of large-scale humanitarian response to climate change damage, coupled with conflict-prevention and response capacities that will certainly be needed in disaster recoveries. An interesting question for developing countries is whether their militaries include highly trained engineers who might be proactive in disaster protection and offer very useful professional skills (e.g., the US Army Corps of Engineers). Recent examples are the Pakistani military response to a 2005 earthquake, and various essential aid distributions and response to the 2004 Indian Ocean tsunami.

The US and UK military also think in terms of prevention and preparedness, as in response readiness to meet “unconventional” or “new security” threats. Yet a careful reading of a growing literature commissioned by the US and UK defense establishments suggests that military officials, too, have multiple agendas.

In the US, military spokespersons have used Senate testimonies as occasions to voice their larger concerns. These concerns include not only the increasing use of military personnel in noncombat operations that nevertheless put them in harm’s way, but also the fundamentally flawed US energy policies and practices that make US military action a seemingly necessary strategy to begin with. Although General Dennis McGinn was cited by the press and NGOs as supporting the idea that “climate change causes conflict,” the larger message and underlying security threat articulated in his Senate testimony concerned US energy policy and practice. He deplored the security threats created by US energy dependency, which put the United States in the position of supporting human-rights violating regimes and put US troops in harm’s way to protect sources of energy

supplies.²⁵⁷ Climate change legislation and programs presented the vehicle and occasion for him to address legislators and the American public and to make his concerns known.

NGOs such as Oxfam prefer to avoid military humanitarianism if possible, mainly to keep the political and neutral parties separate and clearly identified. For example, even though the military may have food resources positioned in the vicinity, NGOs try to access food essentials from nonmilitary supply centers.²⁵⁸ Such separations involve not only political but also cultural operational considerations, reflecting differences in the way the military is trained to go about business.

Militaries, in contrast to civilian humanitarian agencies, enter humanitarian operations with different principles, priorities, and preferred modes of operations. They begin with a principled, politically-identified position, an approach at odds with humanitarian principles of impartiality, independence, and neutrality. The military usually anticipates short-term involvement with an exit strategy; NGOs usually draw on long-term experience and relationships. NGOs try to be bottom-up as opposed to military chains of command, which are top-down. The two use different organizational languages and subscribe to different cultures, which can lead to distrust between warrior and service-provider, as the two usually rely on different communications, resources, technologies, and strategies in the design, implementation, and evaluation of programs that demand working partnerships.

Logistically, there is also the consideration that the military operate from a “top-down” mentality with an authoritative and hierarchical agenda. They are doers, emphasizing no-nonsense efficiencies, which have been used impressively in “campaign” style operations like universal vaccination (against smallpox, in Asia), whereas building self-reliant community capacities may require other mentalities and strengths, particularly in the complex political situations that are likely to be present.

One book-length study of a working partnership (in Afghanistan) concluded that the military has a comparative advantage in operations that build infrastructure but should better train operatives to stay out of the way in situations where humanitarians perform better. The best-case scenario for a post-conflict reconstruction partnership carefully defines tasks, and outlines steps for collaboration between working parties, but experience shows that leadership and follower personalities, as well as rules, make a difference.²⁵⁹ Military engagement

257. McGinn, “Climate Change and Global Security” (2009).

258. Daniel Maxwell, personal communication.

259. S.J.H. Rietjens, *Civil-Military Cooperation in Response to a Complex Emergency: Just Another Drill?* (Boston: Brill, 2008).

may also be the best option for large-scale and immediate response to disasters, such as the Pakistani earthquake in 2005, but then the military must know when and how to exit.²⁶⁰

There are obvious contradictions between the somewhat rigid military structure, discipline, and strategic steps and stated humanitarian NGO appeals for civilian agencies to increase accountability in the face of continuing NGO references to “ad hocism” as a humanitarian *modus vivendi*.²⁶¹ These suggest that learning to work together will be an accommodation process, worked out on a case-by-case basis. In the US “war on terror,” both sides have supported a division of labor that sees the troops providing security for civilian humanitarians, who assist communities in reconstruction. Desires for “efficiency” notwithstanding, civilian humanitarians have expressed particular ire at military can-do tendencies to get infrastructural jobs done quickly, without the messiness of involving local populations and participatory methods.²⁶² Examples include road-building projects in Afghanistan, where Australian troops entered to construct the project rapidly (“efficiently”), thereby destroying six months of painstaking community-trust building on the part of an NGO, which had carefully mobilized the community to take steps to construct this infrastructure, and also to let females work on the project. In other cases, military construction of latrines, waterworks, and roads have prevented communities from effectively self-organizing such activities and taking steps to negotiate with civilian government for additional social services (personal communications, case studies from Afghanistan and Guatemala). In the medium and long term, participatory projects are more likely to produce more self-reliant communities, organically connected to governments for sustainable development.

Since World War II, the world has witnessed a long history of military involvement in disaster response, where military logistics, technical capacities, and budgetary scale have allowed a disciplined, competent, and rapid response unavailable to private civilian agencies.

There is also a growing presence of “peacekeeping (or observing)” activities, especially in conflict and post-conflict sub-Saharan Africa nations, where UN or regional peacekeepers or observers contribute as consumers of goods and services in the local economies of the affected areas. Some of these military, like civilian agents, are welcomed by local communities that are overwhelmed by disaster conditions or in need of the kinds of revenue that the presence of large

260. L. Minear, “The U.S. Citizen Soldier and the Global War on Terror: The National Guard Experience,” FIC (2007).

261. FIC, “Ambiguity and Change” (2004).

262. Minear, “The U.S. Citizen Soldier and the Global War on Terror” (2007).

FIC, “Ambiguity and Change” (2004).

numbers of military or aid workers can provide. For example, civilians in Sierra Leone are reported to have welcomed the various communications investments, quick impact projects, and also personnel (as a market for consumer goods and services) of the UN Mission in Sierra Leone (UNAMSIL). In Pakistan, the local populace appreciated the army's reconstruction of mosques.²⁶³

Because of different organizational cultures and styles, which lead to clashes, one question of interest is whether civilian civil-defense or civilian-response corps might assume certain kinds of "military humanitarianism" activities, as well as civil-engineering activities, such as construction of large-scale waterworks for flood protection or installation of communications networks.

In the US, for example, the State Department is developing a Civilian Response Corps Reserve unit in parallel with military National Guard and reserve units. Not exactly the model of the Peace Corps, the Civilian Response Corps would deploy civilians from across eight government agencies to fill critical professional roles in reconstruction and stabilization programs overseas, and so reduce reliance on for-profit contractors like Blackwater.²⁶⁴

As an alternative to (overstretched) military reservists doing "military humanitarianism," President George W. Bush's State Department expanded its idea of civilian "disaster-response" teams, which would deliver various types of services that the government, especially its military arm, does not otherwise have capacity to undertake. These civilian professionals figuratively would serve as a "conflict-prevention" or "conflict-transformation" corps, providing services and training that help build capacities, maintain livelihoods, and stabilize governance structures. In active-conflict or immediate-post-conflict zones, they also offer a demilitarized "military humanitarianism" model. The "voluntary" dimension suggests "peace corps" (one obvious consideration are situations where military involvement is preferred for security reasons).

A somewhat different model is provided by large indigenous NGOs in Asia, including BRAC and the Federation of Free Farmers Cooperatives. in the Philippines.²⁶⁵ Both have drawn up general and detailed plans to prevent and respond to climate change disasters, which involve no sharp separation between mitigation and adaptation or resilience. Elements of BRAC's plans include more water-tolerant rice varieties, better management of increasing areas for fish farms, and building concentrated housing units on higher ground. All anticipate rising sea levels will reduce land area near the coasts and streams, forcing people

263. Donini et al., "Mapping the Security Environment" (2005).

264. Civilian Response Corps: www.crs.state.gov/shortcut.cfm/4QRB.

265. IFPRI, "Climate Change, Adaptation, and Poverty" (2009).

with adaptable livelihoods to move to higher ground. It is not clear in separate presentations by the BRAC CEO²⁶⁶ and a Bangladeshi general²⁶⁷ how these military and civilian corps network, if at all. (Perhaps they follow some political division of labor between government and NGOs, where BRAC works in certain areas where government cannot or will not; government in others.) Filipino farmers are engaging in awareness training and learning to adopt crops adapted to warmer, wetter, or drier conditions.²⁶⁸

Some in the US military would like to see more proactive preventive activities (no specifics given) and networking of the US military with militaries in other countries (Kent Butts, US Army War College, in IISS²⁶⁹). Others, like UK Brigadier General Nigel Hall (IISS 2009) would like to see more “whole-of-government” climate mitigation, with civilian authorities assuming more responsibility.

IGOs

Institutional questions surround future leadership roles, especially of *UN agencies* that in principle have been responsible up to now for early warning systems and response.

OCHA, thematically, takes responsibility for coordinating humanitarian responses of UN agencies and other organizations. Yet, the Inter-Agency Standing Committee (*IASC*), which includes UN and NGO actors, is the “closest that the humanitarian system comes to having a governance body.”²⁷⁰ (Within the UN, however, there is no reason to think that the mentality that “no one wants to be coordinated” has changed since 1992, when this view was expressed at the International Conference on Nutrition with respect to a coordinating nutrition role for the UN Standing Committee on Nutrition.) *IASC*’s full members include the Food and Agriculture Organization, *OCHA*, the UN Population Fund, the UN Human Settlements Program, the Office of the UN High Commissioner for Human Rights, *UNICEF*, the World Food Program, and the World Health Organization. Its invited members are lead international Red Cross and Red Crescent agencies, several international NGO umbrella associations, associations, the International Organization for Migration, the Office UN High Commission of Human Rights, the Office of the Special Representative of the UN Secretary General on the Human Rights of Internally Displaced Persons, and the World

266. Ibid.

267. IISS, “Defining Global Security in the 21st Century” (2009).

268. IFPRI, “Climate Change, Adaptation, and Poverty” (2009).

269. IISS, “Defining Global Security in the 21st Century” (2009).

270. Borton, “What Will the Humanitarian System Look Like in 15–20 Years?” (2009):15.

Bank. Leadership is vested in the Under-Secretary-General for Humanitarian Affairs and Emergency Relief Coordinator, and Executive Committee on Humanitarian Affairs, which is based in New York and regularly consults with OCHA. These nodes in a “reformed” UN structure take into account UN investments in peacekeeping as a vital dimension of humanitarian response and peacebuilding as a necessary component of recovery and resilience. However, it is not clear what their role will be in a world where Brazil, Russia, India, and China (the BRIC nations) wield greater influence in disaster response. Futures-visioning exercises, especially constructions of scenarios in Asia, foresee a much larger role for China, which raises the additional question of how Chinese military and civilian response corps efforts will fit into this mix.

Normatively and operationally, the IASC “cluster approach,” critiqued above, has so far been adopted by 19 of 26 countries with humanitarian coordinators, and OCHA predicts it will be standard practice in all future emergency responses. Review of successes and challenges in implementation of this approach, and appeal to the World Economic Forum for assistance in public-private coordination and funding, are summarized in the meeting notes from the OCHA sponsored Humanitarian Relief Initiative meeting at that forum.²⁷¹ This meeting entertained a proposal to establish a platform for training, knowledge exchange, and networking around public-private focal points, but unfortunately, the Executive Summary does not speak explicitly about military dimensions.

Humanitarian agencies wondering what future roles will characterize which UN agencies necessarily consider the roles of the new BRIC actors; in what ways they might channel assistance through these international organizations, or instead through their own military and civilian “official” government-affiliated or NGO humanitarian assistance corps (see scenarios in Borton²⁷²).

Red Cross and Red Crescent and their family of neutral humanitarian agencies operate in conflict-affected areas on the basis of international humanitarian principles established in the Geneva Conventions, their Additional Protocols, and subsequent voluntary guidelines that assert professional standards and values. These agencies operate from central offices of the International Federation of Red Cross and Red Crescent societies in Geneva and the International Committee of the Red Cross, but also from regional and national offices. The central office raises emergency funds, represents its agencies in the political arena, and also provides vital technical and communications support. National societies are independently organized, although nationally identified. They carry out programs in more than 150 countries, promoting humanitarian

271. Humanitarian Relief Initiative meeting (2009).

272. Borton, “What Will the Humanitarian System Look Like in 15–20 Years?” (2009):15.

values, disaster relief, disaster preparedness, health, and community capacity building through a strong professional staff supplemented by volunteers. So far, it is not clear what their potential contributions to conflict and disaster prevention might be, as they seek to maintain roles of absolute political neutrality while building prevention and response capacities at community-through-national levels in member countries.

Similar questions arise regarding the roles of nationally identified military troops that operate under the auspices of the UN or multilateral mandates.

Commentators note that the structure and networking of these various agencies are not well defined, and some wonder what their relationships will be with militaries in nations at risk (e.g., Borton²⁷³).

In sum, as the US military, in particular, assumes larger humanitarian and development roles, both civilian and military actors will have to work hard to avoid conflicts in culture, mentality, approaches, and agendas.

NGOs

Apart from IGOs, NGOs – private nonprofit or for-profit agencies – deliver most donor funds, from both public and private sectors. NGO consortia, concerned that intended beneficiaries and clients might be marginalized in coordination processes, created Humanitarian Accountability Partnership (HAP) International, with evaluation tools that could be used by humanitarian agents and local communities to hold all parties responsible to quality standards, which involved listening to the voices of intended beneficiaries (see, e.g., Collaborative Development Action²⁷⁴).

NGOs also make up a large proportion of those subscribing to Sphere Project humanitarian standards, which in 2009 were again undergoing revision, in language if not in practice.

A FIC study in which humanitarian-response personnel were interviewed regarding operations, local response, and understanding in the crises in Afghanistan, Burundi, Colombia, Liberia, Northern Uganda, and Sudan (through 2006), as well as additional personnel in Pakistan, Iraq, Democratic Republic of Congo, Sri Lanka, and Nepal, found that humanitarian workers sensed humanitarian assistance was a universal value.²⁷⁵ But the institutionalization was flawed and conceptually divided between internal and external respondents.

273. Ibid.

274. Collaborative Development Action 2009 Listening Project:
www.cdainc.com/cdawww/project_profile.php?pid=LISTEN&pname=Listening%20Project.

275. Donini et al., *Humanitarian Agenda* 2015 (2008).

Moreover, humanitarian actions – especially where they involve military action – tend to draw communities into conflicts because military forces involved in civic action that are overtly political destroy villages when they suspect insurgent activities, but also because the selection of certain villages over others for health, food-security, or livelihood projects creates conflict.

The study found that humanitarians must adapt to changing circumstances, including constructing capacities for more bottom-up action. But both change and lack of grassroots commitments contribute to failures of trust that threaten operations. Obviously the outlook for the future must include less Northern donor-led action, which might lead to new framings about vulnerabilities. Along these lines, FIC asks whether “conflict-related vulnerability” is still a useful flashpoint, or if humanitarians should instead assume that displacements that create new vulnerabilities inevitably produce conflict, if not violence.²⁷⁶

Over and against these challenges, all of these humanitarian efforts anticipate greater networking, leading to “greater efficiency” and enhanced communications, as telecommunications scale up in terms of availability and scale down in terms of price. Humanitarian efforts also propose to use various kinds of poverty and inequality research to more productive effect, including the creative use of livelihood and assets mapping (geographic information systems *plus*), which may serve humanitarian as well as development agendas.

In all of these cases, questions of public-private partnerships, but also global-national (and in NGOs, global-national-local) partnerships, arise. Some wonder what future roles will hold for NGOs, the activities of which might be sidelined by for-profit operators who might have gained the kinds of community connections that NGOs have long claimed as their comparative advantage. The ways in which NGOs (as a category and also as individual organizations) organize themselves as global and country teams will affect their marketing as well as the market for NGO services. So far there has been little careful study of these intra-organizational aspects to compare relative advantages and disadvantages of global, regional, national, and subnational approaches to divisions of labor.

The existence of such divisions, connected in spokes and hubs, webs, branching trees, or hierarchies, also raises questions about for-profit activities and distinctive identities and cultures at different social and political levels. Indigenous NGOs, like BRAC, have long straddled the divide between the construction of community-based for-profit operations and nonprofit entities competing with national agencies for development and humanitarian funds to do good for their client populations. They are trying to assist in the development

276. Ibid.

of suitable models for the varying environments in which their spinoffs now operate.

NGOs with distinct national offices (e.g., CARE, Oxfam) recognize that these national offices will demand increasing autonomy as they participate in DRR agendas that are nationally owned. Some wonder what the humanitarian agenda will be and, if global offices of NGOs buy into it, whether they will still have capacities, if needed, to deliver traditional humanitarian aid.

These are different from the “native-grown civil-society organizations: Somali-type private religious groups, Hamas-esque social service organizations, diaspora-led voluntary service agencies, ethnic federations, professional groups, and the like” that networked international nongovernmental organization humanitarians anticipate will compete with them for funds, if not for lifesaving activities.²⁷⁷ This highlights a weakness of the humanitarian conceptualization, which is the “us” versus “them” mentality (put crudely).

Ultimately, external humanitarian NGOs, because of their four “petals” (universalism, coherence, safety-security of humanitarian workers, and human security) are more likely to be inclusive than either national government or local NGO operations. In advancing these humanitarian principles, they also have important roles to play in encouraging and insisting upon responsible media reporting, so sensational reports do not enflame new violence and conflicts. “Social resilience” in scenarios of climate change relies not only on good science and good management, but rule of law and effective communications to convince all affected people that they are being attended to and not excluded (paraphrased from Smith and Vivekenanda²⁷⁸).

Conflict-transformation networks of citizen diplomats

A potentially important new set of actors and agents in this mix are networks of citizen diplomats. These professionals or volunteers connect outsiders to insiders, internal to external agents of relief, development, and change, as they seek to bypass the politics of government and intergovernmental (UN) agencies and NGOs, which have their own agendas that (in the opinion of these citizen diplomats) do not necessarily coincide with the best uses of resources to favor peace.

The active theaters of hot conflict in the Middle East provide the best examples and showcase how citizen diplomacy and networking operate – up to a point – to limit or overcome the conflict and related suffering inherent in the deep political

277. FIC, “Ambiguity and Change” (2004).

278. Smith and Vivekenanda, “A Climate of Conflict” (2007).

divides separating Israelis from their neighbors (e.g., Gopin²⁷⁹). Some have shown particular ingenuity and determination in resolving water conflicts (see discussion below), and their well-respected “second tier” diplomacy, which sought mutual trust, facts on the ground, mutual problem-solving and reconciliation in the Israeli-Palestinian water conflicts in the early 1990s, in conjunction with the now-failed Oslo Peace Process (e.g., Assaf et al.²⁸⁰; Feitelson and Haddad²⁸¹), offer models of what citizen diplomacy could accomplish as nations and subnational groups negotiate future access to resources stressed by climate change. Sadly, a review of Feitelson’s publications since 2001 demonstrates the breakdown of this high-level Palestinian-Israeli consultation and promising working partnership.

From disaster management to development preparedness

Finally, a constant theme in the CCCC arena is the need for disaster management (humanitarians) and development practitioners to work more closely together (e.g., Smith and Vivekenanda²⁸²; Smith and Mehrotra²⁸³). This “continuum” or integration of functions is not new (it has been around for at least twenty years), but it is receiving new emphasis in the current context of climate change and conflict. One arena where changes might be made are in MDG and poverty assessments, which so far do not address the humanitarian, development, conflict, and climate change issues head on. As Dan Smith points out in a blog, perhaps one reason is that MDGs are always given quantitative, global-level expression, and “you can’t make a strategy out of quantitative targets; you can only make a wish list.” Ultimately, humanitarian operational plans entail case-by-case reckonings which must take into consideration the status quo in social structural and environmental resources and envision what destabilizing developments, including human mobility, might produce best-case, worst-case, or intermediate scenarios. Thus, it is important that humanitarian and development agencies not plan operations on the basis of quantitative objectives, which could have the result of creating “perverse incentives” and channel aid away from countries that need it most because they are the hardest to work in

279. Gopin, *To Make the Earth Whole* (2009).

280. Assaf et al., “A Proposal for the Development of a Regional Water Master Plan” (1993).

281. Feitelson and Haddad, *Management of Shared Groundwater Resources* (2001).

282. Smith and Vivekenanda, “A Climate of Conflict” (2007).

283. Smith and Mehrotra, “A Climate of Conflict” (2009).

(and to demonstrate benefits relative to costs).²⁸⁴ It is also important that civilian humanitarian agencies not give up their flexibility in the face of alleged military superiority in problem solving based on strategic thinking. Much remains to be worked out in these upcoming partnerships, which promise substantive clashes between humanitarian and political, civilian, and military mentalities.

284. Dan Smith, "Climate, Conflict, Peacebuilding, and Adaptation: A Need for Leaps and Links," Dan Smith's Blog (June 16, 2009): <http://dansmithsblog.com/2009/06/16/climate-conflict-peacebuilding-and-adaptation-a-need-for-leaps-and-links/>.

Dan Smith, "Development Thinking Develops," Dan Smith's Blog (2009): www.international-alert.org/press/archive.php?id=306.

Conclusions and recommendations

Climate change does not create conflict, but climate change can trigger or create tipping points for conflict where conflict-potential exists. In a hotter, more-crowded, and, in places, wetter or drier world, humanitarians should expect there will be more local confrontational politics, competition for resources, and calls for conflict transformation and conflict-sensitive humanitarian modes of operation, especially disaster risk reduction. Possible corollaries include more military engagement in places experiencing more-frequent and more-severe climate-related disasters since the military asserts that it possesses superior logistical and response capacities, in part as a result of training for efficient, strategic, top-down operations, in part as a result of unconstrained funding for operations. One implication is that non-military humanitarians, who heretofore have eschewed any relationship with military, may have to rethink their stance and consider building more-effective military-civilian partnerships. Alternatively, civilian agencies, such as the World Food Program, might be able to achieve comparable logistics on a sustained basis with more-robust and more-secure funding. It might also happen that multiplying complex emergencies could threaten unlimited military funding and strategic capacities and return this space to less expensive civilian agents and agencies, which focus on rapid relief and reconstruction of self-help activities. Such community involvement would also entail careful management of political dynamics, favoring inclusion over exclusion, to avoid “horizontal inequalities” as sources of conflict.

Whether or not climate change causes conflict (CCCC) discourse is accurate or true, it is clear that the language of conflict and security (threat) have become the new terms of argument for “selling” legislative regulations and investments in “climate change” (e.g., Broder²⁸⁵). The language of climate-security connections has been adopted by politicians, climate change and peace experts, and humanitarians and development professionals, who seek expanding influence in the debates and professional and institutional benefits from the impacts of this “world saving” CCCC discourse. This securitization of climate change presents tradeoffs in two directions. As a positive comparative advantage, the CCCC discourse calling attention to climate change as a security threat elicits concern and funding for adaptation-mitigation strategies that might otherwise be absent. As a possible negative, securitization of humanitarian assistance could result in climate change interventions being directed only or mainly to priority security areas (e.g., sub-Saharan Africa, Bangladesh and neighboring countries that receive climate change migrants with accompanying elevation in political

285. John Broder, “Climate Change Seen as Threat to U.S. Security,” *New York Times* (August 9, 2009).

violence), and so ignore other places and populations that might be equally or more threatened or affected, such as Pacific Islanders.²⁸⁶

As a positive corollary, the conflict-security connection encourages study, anticipation, and preemptive interventions in situations where climate change might worsen substantive factors, like water and land stress. Monitoring conflict-prone areas, especially those experiencing migration, along with rainfall and other geo-climate factors, could pinpoint CCCC vulnerability in particular localities. Yet such attention to climate change downplays political and management factors that also contribute to conflict, and also may skew humanitarian resources so far in the “security” direction that resources for traditional humanitarian concerns that are not simultaneously “security” priorities may be marginalized.

All sources (researchers, humanitarians, climate change experts) agree that the relationship between climate change and violent conflict is complex, country-specific, and localized within nations. They also concur that the main impact pathways include competition for scarce environmental resources, especially arable land and clean water, as well as competition for habitable land, which is likely to become scarcer, more crowded, and more costly if worst-case scenarios (especially of flooding) come to pass. An important intermediate factor driving resource competition and conflict is human migration, especially into areas that manage to stay inhabitable while conditions deteriorate around them. Additionally, food insecurity could be an important triggering factor, as it has been in the past.

They disagree, however, on the emphasis paid to political over natural factors, as underlying “root” or “trigger” causes. Government policies that favor one political/geographic/ethnic/religious (PGER) group over another, creating inequities in access to resources, add to historic inequalities, fan PGER competition for resources, and expand motivations for local or more far-reaching conflict. In active or post-conflict situations, governments that fail to dampen conditions of local livelihood loss, inadequate access to food, and other local indicators of human suffering due to some combination of insults from natural and human sources, create conditions for unending or renewed conflict.

Most of the countries of greatest concern, including the case study countries of Sudan, Ethiopia, Israel-Palestine, and Bangladesh are already in conflict or at risk because of past conflicts, which suggests that in the absence of climate change, conflict would occur or would have occurred. The literature on the Darfur region

286. However, it is also the case that even relatively isolated Pacific Islanders may present security threats, such as livelihood-deprived Solomon Islanders, who desire some revitalization of their old patriarchal cults and assertions of superiority and convert en masse from Christianity to Islam. See D. McDougall, “Becoming Sinless: Converting to Islam in the Christian Solomon Islands,” *American Anthropologist* 111 (2009): 480–491.

of Sudan is most explicit on these points. In Darfur, where climate change is implicated but not the main factor in conflict and continuing violence, the summary case study suggests climate change might interfere with projected peace processes or trigger conflict renewal. Humanitarian interventions in Darfur thus emphasize livelihood security and ways in which government and nongovernment agents might contribute or not interfere.

In Ethiopia, where subnational PGER factors and famine have historically contributed to conflict and regime change, it will be important to try to understand how places with substantive evidence of climate change relate to these historical PGER-based patterns of conflict. A research agenda might show whether flash points of political violence are systematically connected to flashpoints of climate change and environmental disasters. In the meantime, humanitarians focus on getting adequate food to those in need and protecting the rights of women and minority populations to avoid exacerbating gender and PGER differences, leading to suffering and violence.

In Israel-Palestine, climate change and access to water and land cannot be viewed outside of the political-identity struggle that creates conflict potential. Interventions thus focus on just ways to meet immediate basic human water needs and multilevel, multisectoral negotiations that might produce some peaceful cooperation, even in the absence of a genuine political peace settlement between Israelis and Palestinians. Humanitarians also help construct ways for Israelis and Palestinians to connect to each other as human beings as one way to enhance positive citizen diplomacy and in the absence of constructive government diplomacy. Outside agents also contribute to the mix of environmental protection, which will mitigate the negative impacts of future climate change, which is already in progress.

In Bangladesh, in the Chittagong Hills district, where local minority populations are already discriminated against socially and politically and are poorer than everyone else, there is already substantial violence as in-migrants make the lives of the local populations more stressful and violent and all fight over resources. Disaster preparedness is part of the action agenda of development agencies, as are efforts to construct alternative and more-secure livelihoods to eliminate pressing needs to migrate. The most important challenges are to make climate change policies conflict sensitive so they create synergies with peacebuilding and development activities. This means going beyond carbon trades and analysis of greenhouse gas emissions to think about climate change impacts on human security and participatory approaches that can make people investors in climate

change adaptation and mitigation, not just victims or beneficiaries of top-down efforts (see Smith and Vivekenanda²⁸⁷).

In these situations the literature is clear that climate change is expected to be the great multiplier of environmental deterioration and conflict threats. The great attention to worst-case scenarios on climate change, however, suggests that preparation for climate change, in lieu of making already bad situations worse, could have the salutary effect of driving cooperation and innovation to mitigate the potentially damaging impacts of climate change. Proposals to engage civil society in planning by raising awareness and participation in the planning process could improve overall response and limit damages. But such positive versus negative outcomes require very careful planning on the part of humanitarian and development agencies, and also a spirit of common purpose on the part of governments, intergovernmental organizations, and the multiple agents and agencies of civil society, who must press for “win-win” rather than “winners versus losers” outcomes.

One implication of the likely impacts of climate change on conflict for humanitarian response institutions and mechanisms and for the international humanitarian response system – UN agencies, the International Red Cross and Red Crescent Movement, nongovernmental organizations (NGOs), and the private sector – is possibly more-effective partnerships with military and private contractors, which would mean some change in policy for agencies, like Oxfam, which have intentionally eschewed such connections in the past.

Additionally, “conflict-sensitive” approaches to development will need to take into account the ways in which climate change and mitigation efforts might be used as intentional weapons, become sources of discontent, and lead to violence. In this mix, immediate attention to food security and human rights implications of the impacts of biofuels is paramount, including situations where demand for biofuels displaces local subsistence farmers from their customary territories, and where demand and supply of biofuels spike food prices and possibly trigger riots (where there exist other sources of political malaise and instabilities) as well as prompt political mobilization.²⁸⁸

The follow-up question is how this political context can shape and be shaped by conflict-sensitive climate change policies that will create synergies through peacebuilding and development activities (see Smith and Vivekenanda²⁸⁹). The

287. Smith and Vivekenanda, “A Climate of Conflict” (2007).

288. E. Messer, “Rising Food Prices, Social Mobilizations, and Violence: Conceptual Issues for Understanding and Responding to the Connections Linking Hunger and Conflict,” *National Association for the Practice of Anthropology Bulletin* 32 (2009): 12.

289. Ibid.

climate policies also emphasize conflict-concerned strategies that look forward to adaptation, which includes conflict transformation or prevention, and not just at greenhouse gas emissions or material water supplies.

Overall findings suggest that the original framing is misleading. It is not simply that there are areas of agreement and disagreement on climate change and conflict links. All agree that climate change is always associated with conflict. The more constructive question is how political context shapes conflict and its transformations. To a large extent, country experts trace more-complex causal pathways and indirect or multifaceted relationships. Nonexperts assert more simply, “Climate change causes conflict.” Every professional and political interest with some other humanitarian or development issue to press can find links to climate change and conflict, which gain them a hearing in the current political context. The media, as well as advocates, tend to cherry-pick their examples and statements from a wider range of political-economic, migration, population growth, economic deterioration, economic development, or humanitarian analyses. They draw conclusions that all these sources warn of conflict “threats” stemming from climate change, but the main sources of threat are usually political-economic decision making. Cautionary notes, such as from the UN Environmental Program (UNEP)²⁹⁰ are disregarded in the run-up to fearmongering, based on worst-case rather than likely scenarios. Out-of-context citations from UNEP, Christian Aid, International Alert, de Waal, and Senate testimony are increasingly visible in blogs, media stories, and “reputable” NGO summaries of issues. As noted above, many of these primary or secondary sources were concerned with issues other than climate change; the “climate change causes conflict” idea brought their priority concerns—for example, forced migration leading to massive displacements of populations, irresponsible energy policies and habits leading to unwise use of the US military—to the public’s attention.

Issues of media

International Alert makes communications,²⁹¹ especially articulation of grassroots community views (including grievances), an essential dimension of climate change and conflict mitigation strategies. Bringing global change and inequalities to everyone’s attention to heighten global awareness of climate change, suffering, and rising conflict-potential are also urgent dimensions of remediation policies. Media have a vital role to play in not only raising awareness, but also responsible

290. UNEP, “Sudan Post-Conflict Environment Assessment” (2007).

291. Smith and Vivekenanda, “A Climate of Conflict” (2007).

accounting, describing situations accurately, and reporting on concrete steps that parties are taking to consult those who have been damaged and to mitigate damages.

Countless new web sites provide a dizzying array of science information, misinformation, and commentary that can be hard to sort through. These sites also run the risk of preaching to the converted and subdividing the audience in ways that may narrow the science knowledge base and reinforce uninformed opinion....

In the face of this changing media landscape...it is crucial that the old-fashioned virtues of good journalism – accurate information, multiple sources, context over controversy, and editorial independence – not be lost in the enthusiasm for communicating content in novel ways.²⁹²

In this context of runaway information of questionable origin, media have the duty to raise awareness responsibly and to help disseminate strategic communications that can help propel situation-appropriate response. But media also have a duty to avoid the tendency to fan conflict by reporting sensationally on climate change and its consequences in ways that will incite violence.

Environmental journalists such as Faris²⁹³ illustrate how effective media can be in raising climate concerns. As a case in point, his essay on climate-change-fueled conflict in Darfur, following in the wake of Hurricane Katrina, was later refuted, point by point, by de Waal.²⁹⁴ But unqualified, it may have influenced UN Secretary General Ban Ki-Moon's statement on climate change and conflict in Darfur, which served to call attention to the problem, but also served to de-emphasize the culpability of the government of Sudan at a time when President al-Bashir was under possible International Criminal Court indictment for crimes against humanity.²⁹⁵

Instead of grandstanding, concerted advocates for conflict prevention and mediation, who also try to use media (including blogs) to express their opinions among the influential and the general public, recommend actions that different humanitarian actors should take to promote resilience alongside efforts around the world to limit greenhouse gases and increase other mitigation and adaptation actions. Suggested actions include (along the lines suggested by Smith and Vivekenanda²⁹⁶) greater attention to conflict dynamics in all climate change

292. C. Russell, "Science Journalism Goes Global," *Science*, 324 (June 19, 2009): 1491.

293. Faris, "The Real Roots of Darfur" (2007).

294. de Waal, "Is Climate Change the Culprit for Darfur?" (2007).

295. Ban Ki-Moon, "A Climate Culprit in Darfur," column, *Washington Post* (June 16, 1997).

296. Smith and Vivekenanda, "A Climate of Conflict" (2007).

interventions. Conclusions also emphasize greater focus on water, especially safer water and more-sustainable and more-equitable management of water resources, through new material and political-economic technologies and the implementation of conflict-transformation methods in areas of resource competition.

In conclusion, such observations also suggest a research agenda, based on particular cases, which can pinpoint (1) how climate change heightens potential for conflict in places that are already conflict-prone, including (a) conflicts that are already winding down or (b) conflicts that are supposed to be over but then renew; and (2) how government political programs of environmental resource management fuel PGER-based conflicts, especially in situations where climate change presents additional stressors.

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