

Climate change as the 'new' security threat: implications for Africa

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The 'securitization' of climate change

Climate change represents the latest in a series of environmental drivers of human conflict that have been identified in recent decades, following others including drought, desertification, land degradation, failing water supplies, deforestation, fisheries depletion, and even ozone depletion.¹ When the research community began to uncover worrying evidence of human-induced climate change in the 1970s and 1980s, the emerging problem of 'global warming' was seen by policy-makers, when it was not ignored altogether, as an environmental issue of peripheral concern, to be dealt with by environment ministries.

By the 1990s, climate modelling had become more sophisticated, actual patterns of change in regional climate conditions were being observed and policy-makers began accepting that ways must be found to reduce greenhouse gas (GHG) emissions. Given that doing so would necessitate drastic changes to the use of fossil fuels, climate change quickly became an economic and energy policy issue. But in just the past few years, the language of climate change has shifted once again. Climate change is now being recast as a threat to international peace and security; and the region seen as most likely to suffer its worst effects is Africa.

The 'mother of all security problems'?

Security analysts and academics have warned for some time now that climate change threatens water and food security, the allocation of resources, and coastal populations, threats which in turn could increase forced migration, raise tensions and trigger conflict.² Climate change was seen by security organizations as an issue lurking somewhere over the horizon, to be studied and monitored. When it came to media attention that the Pentagon had in 2003 commissioned two scenario analysts to consider the implications of abrupt climate change for international security, a

¹ e.g. T. Homer-Dixon, 'On the threshold: environmental changes as causes of acute conflict', *International Security* 16: 2, 1991, pp. 76–116; N. Myers, 'Environmental refugees in a globally warmed world', *BioScience* 43, 1993, pp. 752–61; B. R. Döös, 'Environmental degradation, global food production, and risk for large-scale migrations', *Ambio* 23, 1994, pp. 124–30.

² e.g. J. T. Mathews, 'Redefining security', *Foreign Affairs* 68: 2, 1989, pp. 162–77; B. Rodal, 'The environment and changing concepts of security', *Canadian Security Intelligence Service Commentary* 47, 1994, pp. 00–0; M. A. Levy, 'Is the environment a national security issue?', *International Security* 20, 1995, pp. 35–62.

flurry of breathless news stories ensued, one going so far as to label climate change as the 'mother of all security problems'.³ Such reactions are not altogether unsurprising, since the analysts' paper, which was deliberately provocative, imagined a future where global warming led to the collapse of the Gulf Stream, plunging Europe into a new ice age and triggering widespread unrest.

The international community has since paid increasing attention to the security implications of climate change. In 2004, for example, the British government's chief scientist, Sir David King, suggested that 'climate change is a far greater threat to the world's stability than international terrorism'.⁴ Margaret Beckett, the British Foreign Secretary between May 2006 and June 2007, consciously made 'climate security' a central plank of British foreign policy during her short stint at the Foreign Office. In a major foreign policy address in Berlin in October 2006, Mrs Beckett noted: 'Today, being a credible foreign minister means being serious about climate security.'⁵ A group of eleven high-ranking, retired American admirals and generals released a report in April 2007 arguing that climate change will act as a 'threat multiplier' that makes existing concerns, such as water scarcity and food insecurity, more complex and intractable and presents a tangible threat to American national security interests.⁶

African leaders have added their voices to the growing climate-change-as-security-threat chorus. At an African Union summit in early 2007 Yoweri Museveni, the President of Uganda, called climate change an 'act of aggression' by the developed world against the developing world and demanded compensation for the damage global warming would cause African nations.⁷ A couple of months later, Kaire Mbuende, the Namibian representative to the United Nations, called the developed countries' emissions of greenhouses tantamount to 'low intensity biological or chemical warfare'.⁸

Climate change at the UN Security Council

On 17 April 2007 an unprecedented debate was held at the UN Security Council on the subjects of climate change, energy supplies and security. The debate was the product of concerted lobbying by the UK from its platform as rotating president of the Council. Although widely welcomed by European nations, the very idea of such a debate encountered stiff resistance from some countries. South Africa and

³ P. Schwartz and D. Randall, *An abrupt climate change scenario and its implications for United States national security* (New York: Environmental Defense, 2003); D. Stipp, 'The Pentagon's weather nightmare: the climate could change radically, and fast. That would be the mother of all national security issues', *Fortune*, Feb. 2004.

⁴ BBC News, 'Global warming "biggest threat"', 9 Jan. 2004, <http://news.bbc.co.uk/2/hi/science/nature/3381425.stm>, accessed 7 July 2007.

⁵ British Embassy Berlin, 'Beckett speech on climate change and security', 24 Oct. 2006, <http://www.britishembassy.de/en/news/items/061024.htm>, accessed 7 July 2007.

⁶ National Public Radio, 'Climate change worries military advisers', 2007, <http://www.npr.org/templates/story/story.php?storyId=9580815>, accessed 8 July 2007.

⁷ A. Clark, 'Climate change threatens security UK tells UN', *Guardian*, 18 April 2007.

⁸ United Nations Security Council Department of Public Information, 'United Nations Security Council holds first ever debate on impact of climate change on peace, security hearing over 50 speakers', UN Security Council 5663rd meeting, 17 April 2007, <http://www.un.org/News/Press/docs/2007/sc9000.doc.htm>, accessed 4 July 2007.

Egypt, for example, held that the Security Council was not an appropriate venue for discussions on a systemic issue like GHG emissions. Meanwhile the Chinese representative, Liu Zehmin, argued that the developing countries 'believe that the Security Council has neither the professional competence in handling climate change—nor is it the right decision-making place for extensive participation leading up to widely acceptable proposals'.⁹

Nonetheless, more than 50 countries attended the day-long debate and the majority agreed both that climate change presented a threat to international security and that the Security Council was an appropriate, albeit not the only, forum in which to discuss the issue. African countries were prominent in the debate. Basile Ikouébé of Congo-Brazzaville remarked on the irony in the fact that Africa, the region least responsible for global GHG emissions (the average African produces less than a twentieth of the emissions of the average American), is likely to be the worst affected by the 'excess consumption and carefree attitude of the rich'.¹⁰ The Ghanaian representative commended the Security Council for holding the debate and said it was his country's fervent hope that the 'repeated alarm' sounded about the threats posed by climate change, especially to regions that were already struggling with chronic instability, would 'lead to action that is timely, concerted and sustainable'.¹¹

In short, the issue of the security implications of climate change has caught the political imagination, generating a perceptible shift in the way a growing number of decision-makers are talking about the subject. There are perhaps two reasons for this. The first is self-evident: it is becoming increasingly clear that future climate change threatens to exacerbate existing drivers of conflict in a way that could roll back development across many countries.

A succession of new wars?

For example, a June 2007 report by the United Nations Environment Programme (UNEP) suggested that the conflict in Darfur has in part been driven by climate change and environmental degradation.¹² Over the past 40 years rainfall in the region has fallen by 30 per cent and the Sahara has advanced by more than a mile every year. The resulting tension between farmers and herders over disappearing pasture and declining water-holes underpins the genesis of the Darfur conflict. It also threatens to reignite the half-century-long war between north and south Sudan, currently suspended by a fragile 2005 peace accord. The southern Nuba tribe, for example, have warned that they could 'restart' the war if Arab nomads displaced south by the drought continue to cut down 'their' trees for fodder to feed their camels.

⁹ UNSC Department of Public Information, 'United Nations Security holds first ever debate on impact of climate change'.

¹⁰ UNSC Department of Public Information, 'United Nations Security holds first ever debate on impact of climate change'.

¹¹ UNSC Department of Public Information, 'United Nations Security holds first ever debate on impact of climate change'.

¹² United Nations Environment Programme, *Sudan: post-conflict environmental assessment* (Nairobi: UNEP, 2007).

The UNEP report warned of a succession of new wars across Africa unless more is done to contain the damage of climate change. The report concluded that 'Darfur ... holds grim lessons for other countries at risk'. Picking up on this message in a subsequent *Washington Post* editorial, the UN Secretary General Ban Ki-moon argued: 'Almost invariably, we discuss Darfur in a convenient military and political short-hand—an ethnic conflict pitting Arab militias against black rebels and farmers. Look to its roots, though, and you discover a more complex dynamic. Amid the diverse social and political causes, the Darfur conflict began as an ecological crisis, arising in part from climate change.'¹³ The Darfur crisis has elicited genuine concern on the part of the international community, which has (most would say, at long last) heeded such warnings. At the time of writing the UN Security Council has authorized a large, armed presence to enforce and maintain peace in that region.

Crunch time for a post-Kyoto deal

A second reason for the current securitization of climate change is much more political: it is part of a clear process to invest the international debate with a greater sense of urgency. This year and the next, 2007 and 2008, are key years for international action on reducing GHG emissions. The first period of caps on and reductions of GHG emissions for developed countries under the Kyoto Protocol begins in 2008 and expires in 2012. The November 2007 Bali meeting of the parties to the United Nations Framework Convention on Climate Change (UNFCCC) marks the start of negotiations on what will succeed the Kyoto Protocol. It is widely believed that if there is to be any chance of stabilizing and eventually reducing global emissions, the United States and the large developing-country emitters, such as China, Brazil, Russia, India and Mexico, will need to be part of a post-2012 arrangement.¹⁴ Appealing to the hard security concerns of these countries presents another tactic for gathering additional support for a post-Kyoto emissions reduction strategy.

This tactic is being used by European nations, first by the UK, which as host of the 2006 G8 summit in Gleneagles neatly dovetailed African development and climate change into the summit agenda. In early 2007 the European Union set out its new energy and climate strategy, which deliberately tried to encourage wider emissions reductions. This strategy has committed Europe to reduce its emissions from 1990 levels by 20 per cent by 2020 unilaterally, but by 30 per cent as part of a 'satisfactory global agreement': a sweetener to encourage some of the recalcitrant countries to take part in such an agreement.¹⁵ Consequently, European nations are keen to mobilize popular and political support behind more concerted action

¹³ B. Ki-moon, 'A climate culprit in Darfur', *Washington Post*, 16 June 2007, <http://www.washingtonpost.com/wp-dyn/content/article/2007/06/15/AR2007061501857.html>, accessed 2 July 2007.

¹⁴ A. Najama, S. Huq and Y. Sokona, 'Climate negotiations beyond Kyoto: developing countries' concerns and interests', *Climate Policy* 3, 2003, pp. 221–31.

¹⁵ Europa press releases, 'Limiting climate change to 2 degrees Celsius', 10 Jan. 2007, <http://europa.eu/rapid/pressReleasesAction.do?reference=MEMO/07/16>, accessed 4 July 2007.

on climate change, and a securitized debate provides another way to advance this agenda.

African nations, in both absolute and per capita terms, are insignificant sources of emissions on a global scale. On average, each resident of sub-Saharan Africa produces less than a tonne of CO₂ per year, as compared with an average European's output of 8.2 tonnes of CO₂ and the average North American's of 19.9 tonnes.¹⁶ Whether or not most sub-Saharan countries sign up to a post-Kyoto deal will have little impact on global emissions. However, cases such as Darfur are being held up as cautionary tales for the potential impact of climate change everywhere. In other words, African nations are not the *intended audience* of the post-Kyoto debate, but they are part of the *evidence* being used to make it.

Climate change and conflict in Africa

The dimensions of climate change in Africa

In its 2007 assessment, the Intergovernmental Panel on Climate Change (IPCC) stated that 'Africa is one of the most vulnerable continents to climate change and climate variability, a situation aggravated by the interaction of "multiple stresses", occurring at various levels, and low adaptive capacity'.¹⁷ The expected manifestations of climate change will have a range of consequences for social and economic well-being in many parts of Africa:

- current adaptations of food producers to cope with climatic variability may become inadequate;
- agricultural production may fall, particularly in semi-arid regions;
- existing water shortages will be aggravated, and new nations may join the list of those experiencing shortages;
- rates of ecosystem change will increase, especially in southern Africa;
- the risks of inundation in low-lying settled areas will increase;
- risks to human health from vector-borne diseases are likely to increase.¹⁸

The African continent is likely to warm this century, with the drier sub-tropical regions warming more than the moist tropics.¹⁹ Rainfall patterns will shift as the hydrological cycle becomes more intense. Annual rainfall is likely to decrease throughout most of the region, with the exception of eastern Africa, where it is projected to increase.

¹⁶ World Bank, *The little green data book 2007* (Washington DC: World Bank, May 2007).

¹⁷ M. Boko, I. Niang, A. Nyong, C. Vogel, A. Githeko, M. Medany, B. Osman-Elasha, R. Tabo and P. Yanda, 'Africa. Climate change 2007: impacts, adaptation and vulnerability', in M. L. Parry, O. F. Canziani, J. P. Palutikof, P. J. van der Linden and C. E. Hanson, eds, *Climate change 2007: impacts, adaptation and vulnerability. Contribution of Working Group II to the Fourth Assessment Report of the Intergovernmental Panel on Climate Change* (Cambridge: Cambridge University Press, 2007), pp. 433–67 at p. 435.

¹⁸ Adapted from Parry et al., eds, *Fourth Assessment Report of the Intergovernmental Panel on Climate Change*, vol. 2.

¹⁹ Boko et al., 'Africa. Climate change 2007: impacts, adaptation and vulnerability', p. 448.

By 2050 sub-Saharan Africa is predicted to have up to 10 per cent less annual rainfall in its interior.²⁰ Less rain would have particularly serious impacts for sub-Saharan African agriculture, 75 per cent of which is rain-fed. The areas suitable for agriculture, the length of growing seasons and crop yields are all expected to decrease, with serious consequences for food security. One study estimates that yields from rain-fed agriculture could fall by up to 50 per cent between 2000 and 2020.²¹

Existing water-related problems in Africa are likely to worsen as a result of climate change. Intense rainfall will increase the incidence of flooding in many areas, while reduced overall runoff will exacerbate current water stress, reducing the quality and quantity of water available for domestic and industrial use and hydropower production. Access to water in the countries of the Nile basin, for instance, is dependent on runoff from the Ethiopian highlands and the level of Lake Victoria, both of which are sensitive to variations in rainfall.²²

Towards the end of the twenty-first century projected sea-level rise will affect low-lying coastal areas with large populations: northern Egypt, the Gambia, the gulf of Guinea and Senegal. Large delta systems are at particular risk of flooding, with associated costs estimated at 5–10 per cent of gross domestic product or above.²³ This is a particular concern in countries that have a large part of their industrial capacity under the ‘one metre’ zone. Egypt’s Nile Delta, for example, is one of the most densely populated areas of the world and is extremely vulnerable to sea-level rise.²⁴

Compounding this threat is the predicted exacerbation by climate change of a variety of health problems, leading to more widespread malnutrition and diarrhoeal diseases, and altered distribution of some vectors of disease transmission such as the malarial mosquito.²⁵ Previously malaria-free areas such as the highlands of Kenya, Rwanda, Burundi and Ethiopia will become much more suitable for malarial transmission by 2080.²⁶

Making the climate change–security linkage

To what extent will such impacts affect the stability of African states in the way portrayed in current international rhetoric that links climate change and security? Intuitively, there seems to be a link between these outcomes and the likelihood and longevity of conflict. The scientific basis for climate change is increasingly well established, and there is continuous growth in the amount of research being done on the biophysical impacts of climate change in terms of raised sea levels, altered

²⁰ A. Nyong, ‘Impacts of climate change in the tropics: the African experience’, keynote presentation to symposium on ‘Avoiding dangerous climate change’, London, Met Office, Feb. 2005.

²¹ Boko et al., ‘Africa. Climate change 2007: impacts, adaptation and vulnerability’, p. 448.

²² S. Eriksen, K. O’Brien and L. Rosentrater, *Climate change in eastern and southern Africa: impacts, vulnerability and adaptation* (Oslo: Global Environmental Change and Human Security, 2007), p. 3.

²³ Eriksen et al., *Climate change in eastern and southern Africa*, p. 1.

²⁴ N. Stern, ed., *The economics of climate change: the Stern review* (Cambridge: Cambridge University Press, 2006).

²⁵ Parry et al., *Climate change 2007*, pp. 9–10.

²⁶ Boko et al., ‘Africa. Climate change 2007: impacts, adaptation and vulnerability’, p. 446.

precipitation patterns, and more frequent and fierce storms, and the likely consequences of all these effects for human well-being. However, there is comparatively little empirical evidence on the links between climate change, state security and conflict.

This is to be expected, for the international community has found it very difficult to predict conflict between or within nations with any degree of accuracy, even in the absence of obvious climatic or environmental stimuli. Adding climate change to the analytical mix further complicates matters, given the complexity of climate science and the mass of potential biophysical outcomes. A further analytical challenge is to disaggregate the role of climate change from other environmental, economic, social and political factors, if it is at all possible to do so.

Consequently, the present securitization of climate change is supported for the most part by anecdotal research into developing regions where conflict has been triggered by chronic scarcity caused by environmental change, over-consumption of resources or the combination of both.²⁷ Such analyses have in many cases been influenced by neo-Malthusian models of human–resource relations, which warn that human impacts on the environment are multiplied by increases in human population numbers, levels of consumption and the sophistication of consumer technologies.²⁸ In the pre-climate change era, such analyses led to the conclusion that high rates of population growth in Africa and other developing regions would lead to collapse of the resource base supporting them and consequent instability and risk of conflict.²⁹ Several analysts have argued that resource scarcity resulting from high levels of population growth was a contributory factor in the build-up to the Rwandan genocide in 1994.³⁰

Climate change creates an alternative path to scarcity and collapse.³¹ First, volatile weather patterns swinging between extremes, coupled with changes in rainfall and temperature, have the capacity to reshape the productive landscape of entire regions and to exacerbate food, water and energy scarcities, as envisaged in traditional models. Second, climate change could contribute to destabilizing, unregulated population movements, most of which will be internal, but the ripple effects of which will be felt beyond national boundaries. Third, more extreme weather conditions may lead to more serious natural disasters, stretching the resources and coping capacity of developing countries. Finally, extreme weather events and climate-related disasters will trigger short-term disease spikes but will also have longer-term health implications as certain infectious diseases become more widespread.

²⁷ T. Homer-Dixon, 'Environmental scarcities and violent conflict: evidence from cases', *International Security* 19, 1994, pp. 5–40.

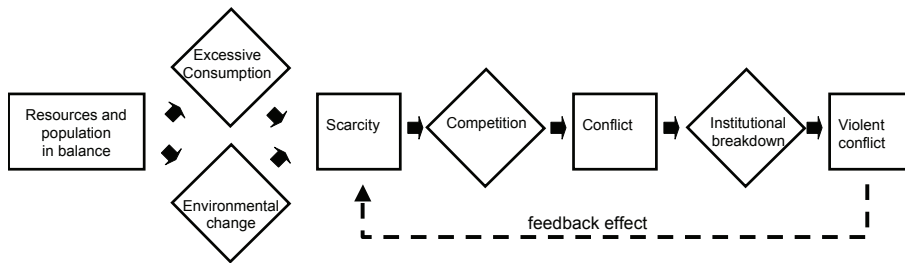
²⁸ P. Ehrlich, *The population bomb* (New York: Ballantine, 1968).

²⁹ D. H. Meadows, D. L. Meadows, J. Randers and W. W. Behrens, *The limits to growth: a report for the Club of Rome's project on the predicament of mankind* (New York: Universe Books, 1972).

³⁰ P. Uvin, 'Tragedy in Rwanda: the political ecology of conflict', *Environment* 38, 1996, pp. 6–15; V. Percival and T. Homer-Dixon, 'Environmental scarcity and violent conflict: the case of Rwanda', *Journal of Environment and Development* 5, 1996, pp. 270–91.

³¹ A. Dupont and G. Pearman, *Heating up the planet: climate change and security*, paper 12 (Sydney, Australia: Lowry Institute, 2006).

Figure 1: Common conceptualization of security impacts of environmental changes



ally lead to conflict. It suggests that when conditions of scarcity arise, through either increased consumption or environmental change, competition may emerge between users of scarce resources. Specific incidents that occur during this competition may give rise to a state of conflict between rival user groups. Where conflict-resolution institutions and mechanisms fail, violence may result. A state of violence acts as a negative feedback mechanism on scarcity, since rival groups may increase their consumption of resources to fund further conflict, and refugees fleeing areas of violence may create new demands for resources elsewhere. In the case of Darfur, the government of Sudan is widely accused of fuelling this dynamic by providing weapons and tactical assistance to groups it supports in that conflict.³²

But while drought in Darfur has undoubtedly brought rival groups into competition for resources, that dynamic alone cannot explain the violence there, for similar competition in other areas, such as northern Nigeria, has not led to more than localized, low-level violence.³³ Neat and objective indicators pointing to the formation of insecurity and conflict are often missing or unreliable. Diagnoses of the Rwandan genocide done after the fact place heavy blame on population pressure on increasingly scarce land resources, but the scarcity–conflict argument has not been used terribly successfully to predict conflict *before* the fact. Scarcity of water has for decades been identified as a potential trigger for conflict in the Middle East;³⁴ yet while there has been and continues to be much conflict in that region, competition for water has not been a significant causal factor.

The projected impacts of climate change for Africa do indeed hold the potential to cause food and water supplies to become more unreliable, and to increase the frequency and severity of droughts, storms and flooding in low-lying coastal areas. In turn, livelihoods *may* be undermined, key resources *may* become scarcer, and an overall decline in the quality of life *may* result. However, we should be extremely cautious before assuming a straight-line progression from scarcity to conflict *will* ensue across Africa, as suggested in figure 1. This is because whether or not climate change contributes to tipping parts of Africa into conditions of violence and conflict will be heavily influenced not only by the nature of the biophysical

³² S. Straus, 'Darfur and the genocide debate', *Foreign Affairs*, Jan.–Feb. 2005.

³³ A. Nyong, C. Fiki and R. McLeman, 'Drought-related conflicts, management and resolution in the West African Sahel: considerations for climate change research', *Die Erde* 137, 2006, pp. 223–48.

³⁴ P. H. Gleick, 'Water and conflict: fresh water resources and international security', *International Security* 18, 1993, pp. 79–112.

impacts of climate change, but also by a given area's susceptibility to conflict and the capacity of the population to adapt to changing conditions.

Adaptation to climate change in Africa

'Adaptation' is a broad concept informed by both the natural and the social sciences, usually implying a process of adjustment to survive and, ideally, thrive in the face of change. In the context of climate change, adaptation takes place through adjustments to reduce vulnerability or enhance resilience to observed or expected changes in climate, and involves changes in processes, perceptions, practices and functions.³⁵ Adaptation may be initiated on a variety of scales, from institutionally driven policies and programmes at national or subnational levels to adjustments and risk management decisions within individual households.³⁶

Africa is often cited as the continent most vulnerable to the adverse effects of climate change and therefore a priority for adaptation funding and projects.³⁷ Among the reasons for this special vulnerability are heavy dependence on climate-sensitive economic sectors, environmental change and degradation (e.g. desertification, coral bleaching, invasive species) and continued expansion of (often marginal) human settlements in hazard-prone areas, such as low-lying coasts.

In spite of this vulnerability, African populations have demonstrated for centuries a tremendous ability to adapt to climate variability, often employing sophisticated and continually evolving processes and practices to respond to risks and take advantage of new opportunities. This adaptive capacity differs considerably across regions, countries and communities, and can take such diverse forms as strategic migration decisions,³⁸ shrewd management and conflict resolution strategies for water resources,³⁹ rapidly changing agrarian and pastoral practices,⁴⁰ and complex socio-economic linkages between rural and urban areas.⁴¹ The range of adaptive strategies currently being employed by African populations can be broadly categorized as including diversification in means of gaining a livelihood, in particular by moving away from farming; adjustments in norms, rules and institutions of governance; adjustments in agricultural practices; development of new opportunities for income generation; and migration.⁴²

The present concern, however, is that the adaptive capacity of African populations may not be sufficiently robust to respond to a rapid exacerbation of

³⁵ Parry et al., *Climate change 2007*.

³⁶ R. McLeman and B. Smit, 'Changement climatique, migrations et sécurité', *Les Cahiers de la sécurité* 63, 2006, pp. 95–120.

³⁷ Boko et al., 'Africa. Climate change 2007: impacts, adaptation and vulnerability', pp. 433–67.

³⁸ K. Hampshire and S. Randall, 'Seasonal labour migration strategies in the Sahel: coping with poverty or optimising security?', *International Journal of Population Geography* 5, 1999, pp. 367–85.

³⁹ Nyong et al., 'Drought-related conflicts'.

⁴⁰ E. L. Crowley and S. E. Carter, 'Agrarian change and the changing relationships between toil and soil in Maragoli, western Kenya (1900–1994)', *Human Ecology* 28, 2000, pp. 383–414; Ced Hesse and Lorenzo Cotula, *Climate change and pastoralists: investing in people to respond to adversity* (London: Sustainable Development Opinion, International Institute for Environment and Development, 2006).

⁴¹ W. Smit, 'The rural linkages of urban households in Durban, South Africa', *Environment and Urbanization* 10, 1998, pp. 77–87.

⁴² Boko et al., 'Africa. Climate change 2007: impacts, adaptation and vulnerability'.

historical climatic variability caused by anthropogenic climate change.⁴³ Much of this concern arises from the constraints on the capacity of African populations to adapt to climate-related stresses—constraints deriving from a wide array of forces and processes entirely unrelated to environmental conditions. These include chronic underdevelopment and poverty; regional economies centred on the economic rent of natural resources; and a disproportionate number of corrupt and/or inept regimes that have their origins in turbulent decolonization and Cold War skulduggery by the great powers. Notwithstanding the rapid urban growth now under way, the livelihoods of a large percentage of Africa's population are still closely tied to natural environmental conditions, and rural populations are particularly vulnerable to the combination of rapid climatic or environmental change and economic stresses experienced through global trade.⁴⁴

Linking adaptive capacity, conflict and peacebuilding

The constraints on adaptive capacity—poverty, weak governance and political marginalization—are also among the factors that contribute to conflict. While conflict is the result of many social factors, this link suggests that where systems are vulnerable to climate stress and the risk of conflict exists, conditions that constrain the adaptive capacity of communities may also increase the risk of conflict. The absence of basic infrastructure and services in marginalized, resource-dependent communities, for example, may limit options to earn a livelihood and exacerbate poverty, thereby increasing grievances and the perception of future insecurity that can in turn increase people's propensity to join armed groups or resort to violence.⁴⁵

In fact, the link between adaptive capacity and conflict can be understood in terms of a positive feedback loop. A lack of adaptive capacity can contribute to conflict, which can go on to undermine adaptive capacity further. Conflict can deplete human resources (through injury, death and illness), destroy infrastructure, exhaust the natural resource base, undermine critical social networks, and weaken governance institutions needed for economic development and innovation. Research in the dryland areas of East Africa, for example, has shown that ongoing conflict in the form of cattle raiding and opportunistic attacks by armed bandits has compromised the ability of pastoralists to undertake seasonal movements to borderland grazing sites in highland areas, one of their primary coping and adaptation strategies for dealing with drought.⁴⁶ Even where traditional coping strategies can no longer be used because of structural changes such as trade liberalization or government policies, persistent violence has depleted the herders' productive asset

⁴³ Boko et al., 'Africa. Climate change 2007: impacts, adaptation and vulnerability'.

⁴⁴ R. M. Leichenko and K. L. O'Brien, 'The dynamics of rural vulnerability to global change: the case of southern Africa', *Mitigation and Adaptation Strategies for Global Change* 7, 2002, pp. 1–18.

⁴⁵ J. Barnett and J. Adger, 'Security and climate change: towards an improved understanding', paper presented to the International Workshop on Human Security and Climate Change, Holmen fjordhotell, near Oslo, 21–23 June 2005, www.cicero.uio.no/humsec/, accessed 2 July 2007.

⁴⁶ S. Eriksen and J. Lind, 'The impacts of conflict on household vulnerability to climate stress: evidence from Turkana and Kitui Districts in Kenya', paper presented at 'Human security and climate change' workshop, Oslo, 21–23 June 2005.

base, thereby restricting their livelihoods and increasing the number of destitute groups who must rely on survival strategies such as charcoal burning and gathering wild foods.⁴⁷

Conversely, the existence of adaptive capacity can reduce the likelihood of violence and instability occurring. The case of drought and water scarcity in northern Nigeria provides useful insights into this link. In the arid and semi-arid regions of West Africa, dry-season migration is one of several components of a typical rural livelihood strategy.⁴⁸ Rainfall levels vary significantly within the growing season; they also vary considerably from one year to the next and from one locale to the next within the region.⁴⁹ Thus rural livelihoods must be inherently flexible and adaptive, and severe droughts resulting in crop and livestock losses may alter seasonal migration patterns from affected areas.

These migration patterns can create conflicts between pastoralist and agricultural communities. Nyong et al. observed that incidents of violence and conflict do occur periodically between farmers and herders, particularly during the dry season, and especially around sources of water and cattle fodder.⁵⁰ However, they also observed that such incidents rarely spread beyond the immediate participants, because traditional conflict resolution institutions that have evolved over generations have proved to be highly successful. These institutions favour the preservation and stewardship of the resource at stake, as opposed to the focus on the apportionment of blame for misuse of resources that is characteristic of formal, western-influenced governance and judicial practices. The authors worry that traditional institutions have suffered erosion in recent years and recommend a reversal of this erosion in order to increase the capacity of the rural population to adapt to future climate change.

This example stands as a lesson that in Africa widespread violent intergroup conflict does not result from drought, as it has in Sudan, without the active facilitation of violence by outside powers. Equally importantly, it also stands as a lesson that the fostering of adaptation does indeed provide an opportunity for positive, fruitful intervention by the international community to foster peaceful economic cooperation among competing groups of resource users in regions where achieving sustainable livelihoods is a challenge at the best of times.

Thus building the capacity to adapt to climate change can help prevent or resolve climate-related conflicts and insecurity. Building adaptive capacity in this context can involve introducing or strengthening measures that protect and diversify livelihoods, ensure access to and availability of key natural resources, and support conflict resolution institutions.

But the design and implementation of appropriate adaptation measures in conflict-affected regions should be viewed through a climate- and conflict-

⁴⁷ S. Eriksen, K. Ulrud, J. Lind and B. Muok, 'The urgent need to increase adaptive capacities: evidence from Kenyan drylands', African Centre for Technology Studies Conflicts and Adaptation policy brief 2, Nov. 2006.

⁴⁸ A. De Haan, K. Brock and N. Coulibaly, 'Migration, livelihoods and institutions: contrasting patterns of migration in Mali', *Journal of Development Studies* 38, 2002, pp. 37–58.

⁴⁹ M. Hulme, 'Climatic perspectives on Sahelian desiccation: 1973–1998', *Global Environmental Change* 11, 2001, pp. 19–29.

⁵⁰ Nyong et al., 'Drought-related conflicts'.

sensitive lens—that is, it must be asked of potential strategies to foster adaptation whether they might in fact inadvertently *undermine* adaptive capacity and therefore contribute to climate-related conflict.⁵¹ Answering this question will require a solid understanding not only of climate trends, but of climate–conflict interactions. Designing and implementing adaptation strategies can either create or resolve conflicts, depending on how the processes are managed. For example, introducing alternative livelihood strategies may encourage local dependence on an activity that proves to be unreliable, thus ultimately increasing vulnerability to climate stress and potentially, therefore, conflict.⁵² The establishment of conflict early warning systems and robust conflict resolution institutions may be deemed an adaptation priority in areas that have traditionally experienced climate-related conflicts.

Adaptation as conflict prevention and peacebuilding

The political momentum behind climate change and (by extension) adaptation provides the international community with a new entry point to revisit some longstanding development problems. ‘Adaptation’, if well done, could help direct international money and attention to reducing vulnerability not just to climate change but also to environmental degradation, poverty and conflict.

The World Bank, in a much-cited figure, estimated that the annual bill for adaptation in developing countries could fall somewhere in a wide range from \$10 billion to \$40 billion. The British NGO Oxfam argued that this was too conservative and suggested that the necessary financing could top \$50 billion annually.⁵³ These figures are, of course, somewhat fanciful; current funds for adaptation are a tiny fraction of this. But if anything approaching this level of funding did come to pass it would represent a radical reallocation of the global aid budget, which was \$103 billion in 2006.⁵⁴

The sort of adaptation activities that emphasize information (on vulnerability and climate risks) and early warning could contribute to conflict prevention. Likewise, adaptation could contribute to longer-term peacebuilding in conflict-prone areas through measures that build adaptive capacity (co-management of water resources; improved resource management in general). That sort of investment might be money well spent; after all, pre-conflict prevention tends to be less expensive than post-conflict peacekeeping (quite aside from the costs of conflict itself). But on the other hand, any future ramping up of adaptation funding would need to be managed carefully. ‘Adaptation’ inherently involves managing access

⁵¹ Africa Peace Forum, Center for Conflict Resolution, Consortium of Humanitarian Agencies, Forum on Early Warning and Early Response, International Alert and Saferworld, *Conflict-sensitive approaches to development, humanitarian assistance and peacebuilding: a resource pack* (London, 2004), available at www.conflictsensitivity.org, accessed 10 May 2007.

⁵² Eriksen and Lind, ‘The impacts of conflict on household vulnerability to climate stress’.

⁵³ Oxfam International, ‘Adaptation to climate change: what’s needed in poor countries, and who should pay’, Oxfam briefing paper 104, May 2007, p. 3.

⁵⁴ OECD, ‘Development aid from OECD countries fell 5.1% in 2006’, 2007, http://www.oecd.org/document/17/0,3343,en_2649_201185_38341265_1_1_1_1,00.html, accessed Aug. 2007.

to and partition of highly politicized natural resources, water, food and land. If managed badly, large amounts of international aid money tied to adaptation programmes could create a new set of problems.

The fifth horseman of the apocalypse?

Regardless of whether the international community manages to strike an ambitious deal to follow the Kyoto Protocol, the inherent inertia of the climate system (in that past emissions will cause future warming) means that a certain amount of climate change is 'locked in'. Whatever happens to greenhouse gas emissions over the next few decades, Africa will still be faced by a range of serious challenges that will fundamentally change the productive landscape of the continent, redrawing the maps of rainfall, water availability, food production and population distribution.

African governments and communities will need to manage these shifts to ensure that competition for resources does not break out into violent conflict over resources. They will also need to put in place the skills and infrastructure that will be needed to cope with increasingly frequent natural disasters and new health problems. This is where the international community can play a role, in helping to provide the means and the technology to anticipate and respond to these challenges.

Ultimately, the extent to which climate change triggers 'a succession of new wars' in Africa, as the 2007 UNEP report glumly predicted,⁵⁵ depends more on governance and governments than on the strength of the climate 'signal' itself. This being so, using projections of climate change in isolation from other factors is probably a poor way to predict future conflict. Meanwhile, the way in which the climate change debate is becoming a debate about security (and in so doing displacing focus on its developmental or environmental consequences) presents both risks and opportunities.

First, the more dire predictions border on scaremongering and risk spreading 'climate change fatigue'—a sense of hopelessness and resignation in the face of an unbeatable challenge—among the wider public. Climate change campaigning has a tendency to gravitate towards worst-case scenarios for political shock value. It is these headlines that get picked up by the media. Too often, it seems that campaigners (and the media) are presenting climate change as an imponderable force, a fifth horseman of the apocalypse that will inevitably usher in conflict regardless of the specific context or the international community's response. But the future is not set in stone; communities are capable of adaptation, given the will, the leadership and the resources to do so.

Second, dire predictions about coming environmental wars imply that climate change requires military solutions, to secure by force one's own resources or erect

⁵⁵ United Nations Environment Programme, 'Environmental degradation triggering tensions and conflict in Sudan', 2007, <http://www.unep.org/Documents.Multilingual/Default.asp?DocumentID=512&ArticleID=5621&l=en>, accessed Aug. 2007.

solid barriers to large-scale distress migration. But focusing on military responses both raises the stakes and diverts attention from the more cost-effective alternative of adaptation.

Third, the 'high politics' of security may draw attention away from existing development problems that pose more immediate threats to vulnerable societies: extreme poverty, access to education, HIV/AIDS and so on. While these development problems will probably be exacerbated by climate change impacts, and should therefore not be considered in isolation from climate change, overemphasis on the security aspect may result in a shifting of priorities and resources that could ultimately exacerbate vulnerabilities. Ultimately, the international community needs to ensure that this is not a purely northern-driven agenda and that it does not become perceived as another way for northern interests to interfere in southern affairs.

On the positive side, a 'securitized' climate debate might be able to marshal sufficiently compelling arguments to encourage the politicians to do something about reducing emissions and investing (carefully) in adaptation. These are things the international community should be doing anyhow and, done well, are consistent with enhancing security and reducing the potential for conflict at all scales. So if securitization speeds their implementation, it will serve a useful purpose.