



International Environmental  
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# Improving Tools and Techniques for Crisis Management

## The Ecological Sources of Conflict: Experiences from Eastern Africa

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## I. LOCATING LINKAGES: CONCEPTUALIZING CONFLICT THROUGH ENVIRONMENTAL FACTORS

‘The environment has a profound impact on our national interests in two ways: first, environmental forces transcend borders and oceans to threaten directly the health and prosperity, and jobs of American citizens. Second, addressing natural resources issues is frequently critical to achieving political and economic stability, and to pursuing our strategic goals around the world.’

*Excerpt from speech by Warren Christopher, former US Secretary of State under the Clinton Administration.<sup>1</sup>*

‘Environmental causes of major significance in this context [the Rwanda conflict] are natural resource linked and are due to population pressure, to decline of agricultural land per family land-holding..., to soil degradation and to shortage of firewood.’

*Dr. James Gasana, former Minister of Defense (1992-1993) in the Rwandan government.<sup>2</sup>*

One of the more controversial directions of conflict research and policy making in recent years is the elaboration of environmental underpinnings of conflict. In a number of different historical, political, social, economic, and natural resource settings, including the Soccer War in El Salvador<sup>3</sup> the conflict in Rwanda,<sup>4</sup> unrest in the Philippines<sup>5</sup>, and the uprising in the Gaza Strip<sup>6</sup>, conflict has been traced to environmental sources. The fundamental basis of environment and conflict linkages, that environmental factors such as natural resources scarcity and environmental degradation can be significant sources of conflict, communicates a clear and common message to a wide variety of conflict specialists. Understandings of negative environmental change and worsening natural resource scarcities are arguments familiar to many. The environment, encapsulated in pessimistic notions of disturbance, collapse, and crisis, is a ready threat on which to hinge new conceptualizations of conflict. These new ways of explaining conflict, by drawing on an extensive field of research into the condition and functioning of the environment, and an even greater body of practice concerning methods for addressing environmental concerns, increase the number of pathways for managing conflict.

Explanations of conflict drawing on narratives of environmental calamity powerfully suggest that new environmentally focused tools and techniques may be constructive for conflict management, as Myers optimistically points out, ‘Could the time be coming when as much lasting security can be purchased through trees as through tanks?’<sup>7</sup> It is thought that tools for improved environmental management, including the sustainable use of natural resources and the protection of threatened habitats, by limiting environmental degradation and encouraging more efficient uses of scarce resources, are potentially important prescriptions for conflict management, as well. Similarly, many believe that policy reform for better environmental management is one possible technique useful to conflict managers. The application of environmental tools and techniques in conflict situations, however, as the following examination of environment and conflict linkages suggests, is arguably risky and problematic.

### A. MODELLING ENVIRONMENT-CONFLICT RELATIONSHIPS

Although scholarship on environment and conflict linkages lends itself to constructing simple policy responses to address confusing and unclear sources of conflict, it is conceptually muddled and analytically weak. Thomas Homer-Dixon, a Canadian political scientist, is the foremost academic advocate of environment and conflict

linkages. As coordinator of a three-year project on 'Environmental Change and Acute Conflict', sponsored by the American Academy of the Arts and Sciences and the Peace and Conflict Studies Program at the University of Toronto, Homer-Dixon developed models to demonstrate the linkages between renewable resource scarcity and conflict. Homer-Dixon's research exemplifies many of the weaknesses of environment and conflict research. One of the main weaknesses of his research, as it will be shown later, is that it simplifies meanings of the environment so as to emphasize clarity and directness in the linkages between environmental factors and conflict, rather than emphasize the plurality and diversity of these. For instance, Homer-Dixon and Blitt define 'environmental scarcity' as 'the scarcity of renewable resources.'<sup>8</sup> Although easy to digest for policy ends, environmental understandings such as these confound great environmental complexity and variety. However weak his conceptualization of the environment arguably is, and despite well articulated questions regarding his theoretical basis and methodological approaches, Homer-Dixon's models of environmental scarcity leading to conflict have generated deep concern for the environmental underpinnings of conflict. Among those influential actors in conflict policy making who have expressed their appreciation for Homer-Dixon's conceptualizations are former US president Bill Clinton and other senior international relations officials in his administration.<sup>9</sup>

The foremost finding of the 'Environmental Change and Acute Conflict' project is that the degradation or depletion of agriculture land, forests, water, and fish will make a greater contribution to 'social turmoil' in the coming decades than will climate change or ozone depletion.<sup>10</sup> The findings suggest that developing countries dependent on the export of raw renewable resources for a great proportion of their economic output, including recent or current conflict areas such as Rwanda, Liberia, Ethiopia, and Somalia, are most susceptible to the 'coming anarchy' inspired by environment loss. Homer-Dixon explains that as population increases and economic outputs grow, 'scarcities of renewable resources will increase sharply.'<sup>11</sup> Central to Homer-Dixon's analysis is a broadening of what he believes is the narrow focus of environment and conflict research. Homer-Dixon argues that environmental change is only one of three primary sources of renewable resources scarcity, the second major finding of his project. These sources include:

1. Supply induced scarcity, caused by degradation or depletion of resources.
2. Demand induced scarcity, caused by population growth or an increase in per capita consumption of resources.
3. Structural scarcity arising from the unequal distribution of resources.<sup>12</sup>

According to Homer-Dixon, these three sources of renewable resource scarcity often interact, the third substantial finding of his 'Environmental Change and Acute Conflict' Project.<sup>13</sup> Two interactions, one resource capture, and a second ecological marginalization, are the most frequent. In the first interaction, resource capture, demand and supply induced scarcities interact to produce structural scarcities (Figure 1 [not reproduced]). As Homer-Dixon and Blitt explain,<sup>14</sup>

'Powerful groups within society, anticipating future shortages due to increased population growth and a degradation of resources, shift resource distribution in their favor, which subjects the remaining population to scarcity.'<sup>15</sup> In the second interaction, demand induced and structural scarcities interact to produce supply-induced scarcities (Figure 2<sup>16</sup> [not reproduced]). Homer-Dixon and Blitt state, 'lack of access to resources caused by inequitable distribution forces population migration from regions where resources are scarce to regions that are ecologically fragile and extremely vulnerable to degradation.'<sup>17</sup>

Elsewhere, this second interaction has been identified as a significant cause of conflict in El Salvador. Myers explains that unequal land distribution in El Salvador pushed 'thongs' of landless peasants onto marginal lands, leading to widespread and severe 'environmental impoverishment' of the densely populated Central American country.<sup>18</sup> Myers argues that severe environmental degradation and violent civil war are not coincidental in El Salvador, but that environmental problems contributed substantially to civil war in the country. Myers concludes that an environmental dimension is essential to security planning.

Homer-Dixon and Blitt explain that in most situations, it is unlikely that environmental scarcities will directly cause conflict.<sup>19</sup> Rather, environmental scarcities give rise to a number of intermediate social effects

that subsequently lead to conflict. These include constrained agricultural productivity, constrained economic productivity, migration, social segmentation, and the disruption of legitimate institutions. Of particular concern to governments is Homer-Dixon's finding that environmental scarcities weaken governmental institutions and states. Homer-Dixon and Blitt explain, 'environmental scarcity... increases society's demands on the state while decreasing the state's ability to meet these demands.'<sup>20</sup> The consequence of such anarchic and dangerous endpoints of renewable resource scarcities, and the most significant point of concern for Northern governments, is that environmental refugees will migrate en masse to Northern countries, carrying their environmental challenges and consummate social effects with them. Media depictions of poor, black Haitian boat people fleeing political chaos in Haiti (a country popularly considered to be 'ravaged' by disturbing rates of soil loss), crowded on improvised rafts crossing dangerous and long stretches of sea, were convincing evidence to many that the increased flow of environmental refugees from conflict areas to the North was a matter worthy of attention to security planners.<sup>21</sup>

Homer-Dixon and his research colleagues examining environment and conflict linkages acknowledge that environmental factors do not act alone in causing conflicts, but that they interact with a number of other intervening causal factors that are important to causing conflict. For example, Homer-Dixon's team concluded that there were multiple factors important to the conflict in Rwanda, and that environmental variables and demographic pressures 'had at most a limited, aggravating role.'<sup>22</sup> Homer-Dixon's study of the Rwanda case, despite its cautiously worded analysis, was nonetheless much criticized as analytically weak in its assessment of the substantially complicated dynamics causing conflict in the small Great Lakes country in Central Africa. Such criticisms could easily be said for his other ambitious studies of linkages between renewable resource scarcity and conflict in Chiapas State in southern Mexico, in the Gaza Strip, and in South Africa.

The overriding importance of Homer-Dixon's models is that they suggest an alarming but analytically appealing (to some, particularly conflict policy makers) scenario of scarcity induced conflicts spreading with greater intensity over expansive areas of the developing world, posing growing challenges to the security interests of Northern governments. Homer-Dixon contends that conflict will likely increase in number in the next decades as scarcities rapidly worsen in areas around the world, a view shared by many security analysts.<sup>23</sup> Elsewhere, Homer-Dixon reiterates his concern for deteriorating international security attributable to renewable resources scarcity, claiming that 'because environmental scarcities are worsening, we can expect an increase in the frequency of conflicts with an environmental component.'<sup>24</sup> As the pronouncements of key international relations actors at the beginning of this section suggest, the environmental sources of conflict that Homer-Dixon speaks of are taken seriously to the upper echelons of security planning in Northern and Southern governments alike.

## **B. LIMITATIONS OF ENVIRONMENT-CONFLICT LINKAGES**

To date, inclusion of environmental underpinnings in conflict management policies is limited, particularly in developing areas. The conflict management activities of important sub-regional organizations in Africa, for instance, such as the Organization of African Unity (OAU), or the Inter-Governmental Authority on Development (IGAD), do not consider the environmental sources of conflict. However, in spite of the limited consideration of environmental factors in conflict policy making, there is a growing awareness of environmental threats and the role of these in conflict situations. In particular, environment and conflict linkages patterned on Homer-Dixon's 'resource capture' and 'ecological marginalization' models, and their gloomy outlook of the local, regional, and global environmental condition, are important to new policy strategies for conflict management. The 'policy-ready' message that Homer-Dixon communicates, however, is limited on a number of points. One point, environmental, is raised below.

One limitation of Homer-Dixon's modeling of environment and conflict linkages is his narrow conceptualization of environmental change. Homer-Dixon defines environmental change as, 'a human-induced decline in the quantity or quality of a renewable resource that occurs faster than it is renewed by natural processes.'<sup>25</sup> The most obvious limitation of this definition is that it does not account for types of environmental improvement, characterized by development, growth, or enrichment. Environmental change is not simply a loss or decline,

but in most cases is more varied, and includes gains and losses, as well as degradations and improvements. Particular with reference to Africa's environments, an expanding body of research on environmental change emphasizes that change (either degradation or improvement) is more dimensional, differentiated, and spatially and temporally diverse than earlier thought. These ideas will be explored in the following section in reference to environments in Eastern Africa. This research points to the variable and contingent condition of the environment, and to the many techniques applied locally to manage environmental uncertainty and limitation for greater individual and group environmental benefits.

A second limitation of Homer-Dixon's models is that they focus disproportionately on linkages between renewable resources scarcity and conflict and ignore other salient linkages between natural resources abundance and conflict. Natural resources abundance, however, is an important source of conflict in a number of settings, including in the Democratic Republic of Congo, Sierra Leone, and in Angola. Collier argues that civil wars occur where rebel organizations are financially viable.<sup>26</sup> One important condition that makes rebellions both financially sustainable as well as profitable, in his view, is the availability of primary commodities such as natural resources. Collier maintains, 'rebellions either have the objective of natural resources predation, or are critically dependent upon natural resource predation in order to pursue other objectives.'<sup>27</sup> Understanding the causal role of resource abundance in different conflict settings is clearly important to effective conflict policy making in specific conflict situations.

A third limitation of Homer-Dixon's models is that they highlight only violent forms of conflict involving environmental factors. However, there are multiple other non-violent contests with significant environmental underpinnings that are omitted from his analysis, even though their assessment would inform a much richer understanding of environment and conflict linkages. A number of recent studies of the condition and use of the environment point to the contesting, although not in all cases violently, character of natural resources use. Many local systems of natural resources management, as it will be seen, depend on risky but tested systems of agreement and negotiation between competing users for the use of individually held and shared resources. For example, in situations where men hold exclusive tenure rights to land, women, in some cases, benefit from secondary rights to use. Where possible, women may also employ a variety of strategies to increase their access to comparably favorable natural resource set-ups, such as by planting trees in their husband's or family's fields, or through investing their labor time on plots to which they hold exclusive access.

The connections between contesting uses of and claims to natural resources and open, violent conflict over these natural resources are less linear and 'clean' than the explanations offered by Homer-Dixon leads us to believe. Rather, in many situations, the outcome of competing uses of and claims to natural resources, either individually held or held in common, is influenced to a great extent by situated arrangements for reconciling different uses and claims. These arrangements depend on the complex use of varying tools and techniques to manage competing uses and claims over environmental resources for outcomes that are less violent than Homer-Dixon explains. If Homer-Dixon's models are adopted as a basis for developing new tools and techniques for conflict management, it is important to note that the environmental linkage to conflict is embedded among complex associations of many other factors whose interactions are highly unpredictable and difficult to source.

### **C. LINKAGES TO 'SECURITY'**

Long before Homer-Dixon modeled the linkages between renewable resource scarcity and conflict, other scholars questioned the limitations of traditional security thinking centered on the protection of state territories through defensible boundaries. Rather, they suggested an expansion of security definitions to incorporate economic, and, in particular, environmental aspects. Ullman's pioneering 1983 article on 'Redefining Security' challenged received, state-centric understandings of security and uncovered a great concern for cross-border security threats that demanded different tools and techniques than conventional ones employed to secure state territories.<sup>28</sup> Ullman maintained that it is useful to view security not only as a goal (implying military ones, for instance, as in removing Iraqi forces from Kuwait during Operation Desert Storm), but also as a consequence (of actions that improve the environment, such as planting trees on farms to increase the availability of fuelwood on smallholder farms, for one example). Ullman outlined a different definition of 'security'. He proposed that 'a threat to national security is an action or sequence of events that:

1. Threatens drastically and over a brief span of time to degrade the quality of life for the inhabitants of the state.
2. Threatens to narrow the range of policy choices available to the government of a state or to private, non-governmental entities within the state.<sup>29</sup>

Ullman purposefully re-defined security broadly to account for a wide range of environmental threats, including natural catastrophes, such as earthquakes, and resource scarcities. Just as Homer-Dixon predicted in articles some 12 years later, Ullman cautioned that conflicts over territory and resources were likely to grow, and most would be in Third World countries. Like Homer-Dixon, Ullman linked environmental threats to the security of Northern states by anticipating that immigration pressures would grow in Northern countries as refugees flee the deteriorating security of Third World states, caused in large part by unwanted environmental events or conditions, to the relative safety and security of Northern, First World states.

Ullman was followed in his call for expanding the traditional definition of security by Mathew's influential article on 'Redefining Security', published in the widely reputed and referenced *Foreign Affairs* journal.<sup>30</sup> Mathew, like Ullman, cautioned that the threat posed by deteriorating environmental conditions was significant enough to pose a security threat to US interests. Mathew called for a broadening of national security to encompass 'resource, environmental, and demographic issues.'<sup>31</sup> To support her argument that security definitions needed to be expanded to include environmental dimensions, Mathew assessed the state of a number of environmental ills, including deforestation, loss of genetic diversity, desertification and soil erosion. These environmental problems, according to Mathew, were significant sources of grave economic and political woes in Sub-Saharan Africa, whose condition she characterized as 'catastrophic.' Mathew's bad news bode darkly for security planners. The policy implications of environmental underpinnings of conflict, in Mathew's view, were that security planning had to incorporate environmental considerations, and this meant widening security planning to a regional level to contend with cross-border environmental problems.

Others are more cautious about incorporating environmental factors into security planning. Deudney warns against treating environmental factors, and more specifically environmental degradation, as national security issues.<sup>32</sup> Instead, he contends that most of the causes of and the solutions to environmental problems must be located outside the domain of the traditional national security system. Deudney forcefully holds, 'The pervasive recourse to national security paradigms to conceptualize the environmental problem represents a profound and disturbing failure of imagination and political awareness.'<sup>33</sup> Dalby adds to Deudney's concerns, pointing out that although environmental issues may gain prominence under the rubric of security research and planning, security solutions may not apply to environmental problems.<sup>34</sup>

Skeptics, like Dalby and Deudney, are wary of using the security apparatus to approach environmental difficulties, particularly in developing countries with a history of coercive environmental policies, such as in many East and Southern Africa countries, including Kenya, Tanzania, Zimbabwe, and South Africa. Past environmental policies in many areas of Africa limited individual prerogative in the management of the environment, and were characterized by forced compliance with centrally formulated policies. An overview of current environmental policies in a number of African states suggests that security tools and techniques may in fact threaten promising trends on the continent aimed at moderating the strategies of earlier approaches to environmental management. Many of these reforms are directed, in theory, at decentralizing control over local environments, and democratizing the process of decision making regarding the management of the environment. However, rather than expand local decision making over environmental management issues, the environmental, if not human, rights of peasant farmers and pastoralists may be limited by the use of security tools and techniques to address environmental problems. Africa, in particular, presents a number of contextual conditions that caution against partnering environmental and security tools and techniques for improved state security, and that challenge popular ways of locating the environment as a conflict risk factor.



## II. THE ECOLOGICAL SOURCES OF CONFLICTS IN SUB-SAHARAN AFRICA PROJECT: LOCATING LINKAGES AND UNCERTAINTY IN EASTERN AFRICA

The potential importance to Africa of more recent research of the environmental underpinnings of conflict, and the even greater importance of the policies that this research informs, is enormous. Conflict management continues to be one of the more important policy challenges facing governments across the Africa continent. A recent report on the causes of conflict in Africa by the United Nations Secretary General found that in 1996, 14 of 53 countries in Africa were afflicted by armed conflict, accounting for more than half of all war-related deaths globally.<sup>35</sup> The social and economic impacts of the continent's many conflicts is staggering. Globally, five of the ten countries generating the most refugees are in the Eastern Africa region alone. It is estimated, for instance, that 29% of Rwanda's population live as refugees in neighboring countries, and 12% of Eritrea's.<sup>36</sup> Three countries in the Eastern Africa region, including the Democratic Republic of Congo, Sudan, and Ethiopia, rank in the top-ten refugee hosting countries worldwide.

Diplomacy, policy, and intervention to manage conflicts in Africa have been largely ineffective. The tools and techniques employed to address conflicts in Africa thus far have failed to bring about more peaceful outcomes of disputes in most situations. The contextual conditions specific to Africa attest not only to the challenge confronting conflict managers on the continent, but also to the need for different tools and techniques, applied in creative combinations, to address differentiated contexts and conflict management needs.

Anticipating the potentially important role of environmentally focused tools and techniques in an expanded range of resources to address conflicts in Africa, the African Centre for Technology Studies (ACTS) recently widened the remit of its policy research to include the study of conflict policy.<sup>37</sup> The emphasis of ACTS' conflict research is a project on the *Ecological Sources of Conflicts in Sub-Saharan Africa*. The overall objective of the Project is twofold. One, it seeks to identify and assess the extent to which environmental factors have been important sources of conflict in the Eastern Africa region. Three person country study teams are preparing country study assessment reports on the environmental sources of conflict in Eritrea, Ethiopia, Sudan, Somalia, Kenya, Rwanda, Burundi, and in the Democratic Republic of Congo. A second objective of the Project is to promote the integration of environmental factors into regional and international processes aimed at conflict management and prevention in the Eastern Africa region. These considerations are few, even in peace processes directed by sub-regional organizations with strong natural resources portfolios, such as IGAD.

*The Ecological Sources of Conflicts* Project is influenced by a number of factors. One, security in Africa in the post-independence period has been compromised by conflict, political crisis, and civil unrest. An overriding climate of insecurity on the continent has impaired development, obstructed the provision of basic services including health and education, and constrained the establishment of accountable, representative, and legitimate institutions in many situations. The underlying sources of conflict on the continent must be identified and sustainable conflict prevention and management measures must be in place to restore stability and to promote an environment in which livelihood needs can be addressed.

Two, while substantial investments have been channeled into developing tools and techniques for conflict prevention and management in Africa, the impact of these has been disappointing. Conflict remains an urgent policy concern in Africa. While the emphasis of conflict -interventions in Africa are rightfully centered on negotiating competing political viewpoints, the environmental dimension to conflicts in Africa is not understood or effectively incorporated into the development of tools and techniques relevant to the prevention and management of conflicts in Africa.

Three, although there is a substantial discourse on environment and conflict linkages within conflict policy debates, little of this discourse is immediately relevant to conflict policy making in Africa. The conflict environment in Africa is 'messy'; interactions between different dimensions (i.e. environmental, economic, political) are more contingent than they are predictable. These dimensions vary greatly between different conflict environments. Moreover, rarely are different conflict dimensions neatly delineated spheres in which policy constructions are easily arrived at. Inconsistency and volatile interaction between these are typically the rule.



*The Ecological Sources of Conflicts* Project addresses each of these factors. One of the more important aims of the Project is to facilitate the development of environmental tools and techniques responding to an Africa vernacular, for the improved management of conflicts on the continent. This requires that environment and conflict linkages be articulated in an Africa context. To this end, the Project will contribute to a discourse on environment and conflict linkages that is relevant to conflict policy making in Africa. A more useful discourse on environment and conflict linkages for policy making in Africa moves beyond the limitations of environmental understandings imparted in Homer-Dixon like modeling. Although environmental degradation and scarcity feature prominently in most descriptions of environments in Africa, a growing number of local level environmental researches on the continent point to a far greater uncertainty regarding the environmental condition on the continent. Instead, African environments demonstrate a greater degree of heterogeneity and complexity than is communicated in most environment and conflict models.

Alternative perspectives on environments in Africa raise a number of questions. *One*, what features other than decline and scarcity characterize Africa's environments? *Two*, what are the overriding features of rural environmental management on the continent? And *three*, and related to the second question, what strategies are important to rural systems of environmental management for negotiating environmental change and natural resources scarcity? Each of these questions is explored below.

## **A. WHAT FEATURES OTHER THAN DECLINE AND SCARCITY CHARACTERISE AFRICA'S ENVIRONMENTS?**

A decline in the condition of the environment and a scarcity of natural resources are characteristics commonly associated with Africa's environments. However, in contrast to most negative readings of the continent's environments, environments in Africa have great diversity and variety, and at different spatial and temporal scales, than most assessments suggest. Decline and scarcity do not characterise all environments in Africa. Rather, different environments will have a mix of both advantages and disadvantages, and these will be distributed unevenly between different land users and at different times. Other dimensions of environments in Africa, including uncertainty, variability, and change, are important elements of any characterisation of the continent's many environments.

How each of these dimensions relate to conflict dynamics, however, is poorly understood. Most analyses of Africa's environments emphasise environmental degradation and collapse, but focus less on environmental uncertainty, variability, change, and how rural natural resource managers negotiate these dimensions in ways that effectively manage environmental sources of conflict. Other important conflict and environment linkages that are little researched include situations in which environmental improvement leads to conflict, and situations in which resource abundance contributes to conflict. These and other limitations of received knowings of natural resources in Africa support a reappraisal of the continent's varied environments, and how a multitude of possibly contradictory environmental characteristics give rise to conflict.

## **B. WHAT ARE THE OVERRIDING FEATURES OF RURAL ENVIRONMENTAL MANAGEMENT ON THE CONTINENT?**

Most assessments of environments in Africa focus on mal-adaptive natural resource use systems as one factor contributing to environmental decline. However, environmental management on the continent, as newer researches in areas of eastern Africa show, is clearly more differentiated than many assessments suggest. Some of the many features of environmental management that these and other researches highlight include innovation, ways of improving the natural resources base, and strategies to obtain greater environmental benefits through informed systems of using natural resources. Although rural environment management systems do lead to unwanted changes in the environment in some local settings, other systems are highly flexible and intelligent, and enhance the value of some natural resources, for some individuals and groups within communities, and at

certain times. There are clear patterns of environmental improvement in some rural areas in Africa, many of which transform environmental limitations into opportunities for different groups, with some winning and others losing. The dominant emphasis of research on environmental sources of conflict, however, is on negative environmental change and on ‘losers’ of environmental changes. Particularly in relation to emerging trends in conflict management that seek to intervene in society-environment relations as one strategy for managing conflict, however, it is important to understand the various forms of advantage and disadvantage, as well as gain and loss, of different environments in question.

### **C. WHAT STRATEGIES ARE IMPORTANT TO RURAL SYSTEMS OF ENVIRONMENTAL MANAGEMENT FOR NEGOTIATING ENVIRONMENTAL CHANGE AND NATURAL RESOURCES SCARCITY?**

While most conflict and environment analyses continue to rely on a combination of catastrophe and threat to mould wider meanings of how different environmental factors contribute to political conflicts, overriding systems of rural environmental management in Africa point to more mixed environmental forms, and to a variety of strategies used locally for negotiating environmental limitations and stress. One of the more important strategies used in rural areas of Africa for negotiating natural resources uncertainty and change is the spatial and temporal flexibility of rural environment management systems. Related to this is openness and opportunity, and a readiness to innovate improved systems of managing uncertain environmental contexts using new variables in the environment.

Research across the continent, in a wide variety of environments, suggests that rural environmental managers, far from being helpless to the vagaries of nature, are savvy and manipulate environmental uncertainty to their favour. How this local action translates into conflicts taking an environmental dimension, however, is far from certain. Typically it is assumed that by making rural environmental managers more pro-active in their use of natural resources, the environment may be improved in order to manage conflicts more effectively. Certainly this assumption holds true in only a limited number of settings and for a limited number of actors. There is a need to shift to a view that is more acknowledging of informed action on the part of rural actors, and that places these actors in highly dynamic environments. This may help to shift debate on the environmental origins of conflict from one of how to introduce sustainable ways of using natural resources to how to strengthen competing yet workable local ways of managing environmental stress.

The preceding discussion of environments in Africa demonstrates that the linkages between environmental factors and conflict are mixed and complex. Newer readings of environments in Africa suggest that these are far from certain and predictable. Tracing the environmental origins of conflict, therefore, involves a deeper and more situated analysis than linking general claims of environmental decline to a wide range of conflicts. More recent studies of the continent’s environments impart many alternative ways of understanding ecological principles such as scarcity, stress, and change. The challenge is to apply new knowledge on Africa’s environments, and on systems of environmental management in rural areas of the continent; to developing tools and techniques that are useful for conflict prevention and management in Africa.

### **III. TOOLS AND TECHNIQUES FOR CRISIS MANAGEMENT: THE ENVIRONMENTAL DIMENSION**

Like other areas of the developing world, there is a growing appreciation among conflict policy makers in Africa for the environmental origins of conflict. Conflicts in Africa, though often linked to political and communal differences, are now understood to have potentially important linkages with environmental factors. The widening recognition that there are environmental underpinnings to conflict is strengthened, in part, by

the ineffectiveness of many mechanisms for preventing and managing conflicts. In many cases these do not promote the peaceful negotiation of competing interests. One of their possible limitations is that they do not incorporate environmental tools and techniques. The need to adapt conflict policies and the mechanisms they inform to more varied and complex conflict settings is tremendous. This suggests understanding the linkages between conflict and environmental factors such as natural resources abundance and scarcity, and environmental change, and effective ways of responding to these connections so as to promote less violent outcomes of conflict. Expanding the role of environmental instruments in conflict prevention and management in Africa may encourage more non-violent outcomes of conflicts on the continent.

This section uncovers possible uses of environmental tools and techniques in conflict prevention and management in Africa. We highlight an environmentally focused approach for conflict prevention and management as one method of addressing crisis. We acknowledge that there are multiple factors underlying crisis, conflict being one of these. Others include the unequal distribution of resources, natural catastrophes, discriminatory development patterns that ignore critical social and economic dimensions, unrepresentative government, and the violation of human rights. Below we describe what role there is for environmental tools and techniques in mediating crises with many dimensions such as these..

## **A. CONNECTIONS TO CRISIS MANAGEMENT**

Conflict is closely related to crisis in Africa. Many crises in Africa have been precipitated by conflict, such as the humanitarian crisis in Central Africa following violent conflict in the neighbouring countries of Rwanda, Burundi, and the Democratic Republic of Congo. Other crises on the continent that are closely related to conflict include strong environmental factors, such as the humanitarian challenge in Southern Sudan, or the refugee crisis in Guinea in West Africa. Conflicts in both Southern Sudan and in the Guinea-Sierra Leone-Liberia nexus, involve violent competitions to control valuable natural resources such as oil, timber, and diamonds. Crisis in Sudan, in Rwanda, in Burundi, in the Democratic Republic of Congo, and in West Africa clearly suggest that crisis management is inseparable from conflict prevention and management.

Historically, the focus of crisis policy-making in Africa was on response and containment. On-going crises on the continent, however, have encouraged the integration of conflict prevention and management as an important component of crisis management. Within the new emphasis on conflict in crisis management is a recognition that environmental factors are clearly important to preventing crisis, and to effectively managing and containing crisis once it has begun. Arguments surrounding the environmental origins of conflicts, and the best ways of contending with these, are rooted in a wider debate over the distribution of resources and of sustainable development. Policy-makers are faced with the challenge of reconciling the interests of multiple social groups, while at the same time advancing fundamental human and environmental rights, including secure access to natural resources needed for the sustainable development of all individuals and groups in society.

Environmental sources of conflict, therefore, relate to larger structural inequalities in the access and use of natural resources between different social groups. The linkages between environmental sources of conflict and crises, however, are complex, and are mediated by numerous other non-environmental factors. It is extremely difficult, therefore, to link specific strategies for preventing and managing environmental sources of conflict to improved ways of coping with crisis. These linkages can only be assessed in specific crisis situations, such as in the Southern Sudan. Framing effective institutional arrangements for distributing the benefits of oil extraction more equitably between different social groups in Sudan, for example, is arguably one important technique to managing the conflict in Southern Sudan, and to establishing an environment in which the humanitarian crisis there can be effectively addressed. Environmental tools and techniques, therefore, are useful in addressing crisis. However, judging from the example of Sudan, it is evident that the use of tools and techniques to address environmental factors of conflict is difficult. It involves engaging well-established and complicated social, economic, and political relationships, as well as the institutions through which these relationships are structured and acquired meaning. The use of tools and techniques to address environmental sources of conflict is political, and incorporates laws, markets, and cultural norms in an uncertain process through which resources themselves, and the rights to use these, are re-negotiated through different social groups.

Mediation and negotiation are important techniques in the prevention and management of environmental sources of conflict. They offer an alternative, non-violent means through which different groups can negotiate over access and rights to use natural resources. In order to secure the potential benefits from negotiated outcomes, the stakeholders must be accorded adequate facilities to make informed choices. Those groups facing the greatest effects from decisions deserve a corresponding stake in the negotiations.

In promoting tools and techniques to address environmental underpinnings of conflict, it is important to acknowledge other challenges complicating their use. These include environmental ones. For example, the overriding context in which crisis repeats itself is characterised by accumulating impacts of natural resources stress and limitation. Kenya recorded 3 significant droughts in the 1990s. In areas of southern Africa, to give another example, severe flooding in Central Mozambique in 2001 followed devastating floods in the same area in 2000. Crisis response in contexts of repetitive natural disasters is extraordinarily difficult. Options to address crisis in these situations are significantly constrained by the extent and severity of the environmental factors themselves. One alternative is to partner externally provided tools and techniques with local civil society activities. Incorporating local experience in managing re-occurring environmental stress and limitation in the deployment of external tools and techniques can make the uses of these more effective in crisis management. To enhance the participation of local civil society it is important to consider issues of legitimacy, ownership, and institutional flexibility in the use of tools and techniques for crisis prevention and management. Successful ways of incorporating local participation are recorded in Kenya, where civil society was mobilised to address a resource-based conflict with crisis dimensions.<sup>38</sup> Central to their success was bringing all stakeholders to the negotiating table and establishing conditions in which competing interests could be addressed through a participatory and inclusive dialogue.

## **B. TOWARD TOOLS AND TECHNIQUES**

The main challenge facing crisis managers where ecological factors are involved is to non-violently negotiate competing environmental needs, claims, and rights. Cumulative effects of both human and natural inputs into the environment factor significantly in shaping environmental features into contested resources. This can be addressed through options assessment processes of which dialogue is central, gaining public acceptance, recognising entitlements and sharing benefits. Local ownership of tools and techniques for addressing environmental sources of conflict is critical if these are to be effectively employed as part of crisis prevention and management activities. In the field of security, for example, there have been considerable efforts to cooperate rather than compete over shared environmental concerns.

In general, the tools and techniques for addressing environmental aspects of conflicts relate to ways of improving the environment for a variety of different social actors in conflict. This may include conservation activities, such as to protect common property forests used by local communities for gathering fuelwood, or improving the access to use key resources for environmentally marginalised populations. Other techniques include diversifying local economies to decrease demand on scarce natural resources, promoting linkages between local natural resources economies and regional markets, increasing local decision making in the use of natural resources, and securing tenure rights to natural resources for economically or environmentally underprivileged groups.

Central to these and other techniques for environmental improvement is an appreciation of environmental rights. A rights-based approach to environmental governance is an essential tool for negotiating environmental sources of conflicts. Environmental sources of conflicts are inseparable from grievances rooted in the uneven distribution of environmental advantages and disadvantages, and potentials and limitations. An inclusive decision-making process is critical to determining the distribution of contested resources, as well as access to their use for secondary and tertiary users. Different user groups must be able to participate in decision-making in good faith for the process to work well. Decision-making processes concerning the distribution of environ-

mental resources should be undertaken in a collective political process and upheld through binding and formal agreements. These and other tools and techniques to address environmental sources of conflict are more effective if they target differences in access and use of environmental resources rather than attempt to enhance the overall environmental condition.

There are a number of principles to consider in the development of tools and techniques to address environmental sources of conflict for improved crisis prevention and management. The following policy principles underlie contemporary methods used in planning and management of natural resources. The principles inform the understanding that full knowledge of the benefits, impacts, and risks of decisions relating to environmental resources will reduce conflicts in a significant way. These principles include:

- 1. Participation.** It is important that tools and techniques used, in addressing environmental sources of conflict gain public acceptance through the informed participation of a wide range of environmental resource use groups. This involves bringing tools and techniques into the public domain, and initiating dialogue on their objectives, uses, and potential impacts for different users. Crisis managers also must be open to alternative uses of different tools and techniques they introduce to the public domain, as well as to entirely new tools and techniques identified in the process of incorporating public participation in the development of crisis response and management strategies.
- 2. Diversity.** Given the diversity and prevalence of conflicts predicated on environmental resources and the nature of these resources, tools and techniques for managing these conflicts are more useful if they are moulded to the specific characteristics of local settings. Particularly in Eastern Africa, environments are unpredictable and natural resources uses are diverse among competing social groups. At the same time, it is important to identify regional and national linkages with local settings and how outside factors connect to particular crisis dynamics locally.
- 3. Contingency.** Planning for crisis prevention and management must be contingency based. Environmental factors underlying conflict and crisis are uncertain, posing unexpected and problematic challenges for crisis prevention and management. Consequently, policies and institutions for preventing and managing crisis must be flexible so as to be adjusted quickly in order to respond to changeable and variable environmental contexts.
- 4. Institutionalising.** Crisis prevention and management must be institutionalised within agencies having environmental mandates in order to have a greater impact. Crisis is an inevitable part of the environment. It is important that crisis prevention and management be incorporated as a fundamental part of natural resources management and planning within environmental agencies. One possible approach is to establish a department charged with crisis prevention and management within different environmental agencies.
- 5. Incentives and fines.** Tools and techniques to address environmental sources of conflict should include an appropriate mix of regulatory and non-regulatory measures, such as incentives and sanctions. Where possible, incentives should be used to promote co-operation and adherence with strategies for addressing environmental sources of conflict. However, sanctions, in the form of fines and/or punishments, should be used in those situations in which some user groups disrupt the process of finding an end to a conflict with environmental underpinnings.
- 6. Sustainability.** Many environmental sources of conflict require lasting solutions and not short-lived interventions. Sustainability is important if tools and techniques to address environmental sources of conflict are to gain the confidence of different environmental resource user groups. Different user groups will be more likely to participate in the process of developing tools and techniques, as well as to support the uses of these, if they are confident that they will have a lasting impact.

There are other cross-cutting issues that determine the effectiveness of tools and techniques for crisis prevention and management. Capacity building, for example, including strengthening the capacities of environmentally underprivileged groups to participate in the development of tools and techniques, as well as in environmental decision-making processes, is important to forming more effective crisis prevention and management strategies. Different environmental resource user groups must be able to equitably negotiate access to environmental resources and to exercise their rights through access to political and legal regimes. Many environmental conflicts are more effectively prevented and managed through meaningful legal recognition of community rights, as well as by granting local user groups political recognition and rights. Clear policies on local rights of access and management of environmental resources are also important to the prevention and management of environmental sources of conflict. Increased regard for customary regulations governing resource use should be accompanied by the articulation of environmentally and socially equitable development programmes that are integrated into larger policy and legal frameworks (such as decentralised control over environmental resources and democratic environmental decision-making process).

## IV. CONCLUSIONS

The role of different environmental factors in conflicts in Africa, including natural resources abundance, natural resources scarcity, environmental improvement, and environmental degradation, are testimony to the changing context of the environmental conflicts debate – that linkages between environmental factors and conflict are all about pathways to sustainable development and equity. Preventing and managing environmental sources of conflict means identifying ways of sharing environmental resources equitably and in a sustainable manner so as to meet the needs of different user groups. It also demands promoting more inclusive and participatory environmental decision-making processes. This may enable different environmental resource user groups to view decisions concerning the distribution and uses of environmental resources as legitimate. The integrity of the decision-making process determines the integrity of the decision-making outcome. The outcome is the equitable distribution of environmental costs and benefits and risks and opportunities, and, ultimately, improved ways of preventing and managing crisis' structural origins.

Environmental sources of conflict are inseparable from environmental rights. Environmental sources of conflict are not exclusively a problem of improving the overall condition of the environment. Rather, they relate strongly to the uneven distribution of environmental risks and opportunities. As such, tools and techniques for preventing and managing environmental sources of conflict with crisis dimensions must engage challenging issues of environmental rights if they are to have an effective and sustainable impact. It is clear that there are many opportunities to innovate improved ways of preventing and managing crisis by incorporating tools and techniques to address environmental sources of conflict. In Africa, numerous crises, such as those in the Great Lakes region of Central Africa, in the Horn of Africa, and in areas of West Africa, have been precipitated by conflicts with strong environmental underpinnings. Crisis managers must recognise that environmental sources of conflict correlate strongly with the severity of crisis. Targeting uses of tools and techniques to address environmental sources of conflict, therefore, can significantly improve crisis prevention and management.



## Endnotes

- <sup>1</sup> Quoted in Matthews, R. 2000. 'The environment as a national security issue.' *Journal of Policy History*, 12, 101-122.
- <sup>2</sup> Gasana, J. 2000.
- <sup>3</sup> Myers, N. 1989. 'Environment and Security.' *Foreign Policy*, 74, 23-41.
- <sup>4</sup> Gasana, J. 2000.
- <sup>5</sup> Myers 1989.
- <sup>6</sup> Percival, V., and Homer-Dixon, T. 1998. 'The case of Rwanda.' *Ecoviolence: Link Among Environment, Population, and Security*. Eds. Homer-Dixon, T., and Blitt, J, Lanham: Rowman and Littlefield.
- <sup>7</sup> Myers 1989, p. 41.
- <sup>8</sup> Homer-Dixon, T., and Blitt, J, 1998. *Ecoviolence: Link Among Environment, Population, and Security*. Lanham: Rowman and Littlefield. Page 1
- <sup>9</sup> Matthew, R. 2000.
- <sup>10</sup> Homer-Dixon, T. 1999. 'Thresholds of turmoil: environmental scarcities and violent conflict.' *Contested Grounds: Security and Conflict in the New Environmental Politics*. Eds. Deudney, D. H., and Matthew, R. A. Albany: State University of New York Press.
- <sup>11</sup> Homer-Dixon 1999, p. 61.
- <sup>12</sup> Homer-Dixon and Blitt 1998, p. 6.
- <sup>13</sup> Homer-Dixon 1999.
- <sup>14</sup> 'Resource Capture', as conceptualized by Homer-Dixon (1999), occurs when environmental degradation and population growth encourage powerful groups within society, who anticipate worsening environmental scarcities, to 'capture' resources for their benefit.
- <sup>15</sup> Homer-Dixon and Blitt 1998, p. 6.
- <sup>16</sup> ['Ecological marginalization', as conceptualized by Homer-Dixon (1999), occurs when population growth and unequal resource access interact, leading to environmental degradation and to increased environmental scarcity.]
- <sup>17</sup> Ibid, p. 6.
- <sup>18</sup> Myers 1989.
- <sup>19</sup> Homer-Dixon and Blitt 1998, p. 9.
- <sup>20</sup> Ibid, p. 10.
- <sup>21</sup> Mathew, J. 1989. 'Redefining security.' *Foreign Affairs*, 68, 162-177.
- <sup>22</sup> Percival and Homer-Dixon 1998, p. 201.
- <sup>23</sup> Homer-Dixon 1999.
- <sup>24</sup> Homer-Dixon, T. 1996. 'Debate.' *Woodrow Wilson Center Environmental Change and Security Project*, 2, p.53.
- <sup>25</sup> Homer-Dixon 1999, p. 64.
- <sup>26</sup> Collier, P. 2000. 'Economic causes of civil conflict and their implications for policy.' *World Bank*
- <sup>27</sup> Ibid, p. 21.
- <sup>28</sup> Oilman, R. 1983. 'Redefining security.' *International Security*, 8,129-153.
- <sup>29</sup> Ibid, p. 133.
- <sup>30</sup> See Footnote 16.
- <sup>31</sup> Matthew 1989, p. 62.
- <sup>32</sup> Deudney, D. 1990. 'The case against linking environmental degradation and national security.' *Millennium: Journal of International Studies*, 19,461-476.
- <sup>33</sup> Ibid, p. 474.
- <sup>34</sup> Dalby, S. 1992. 'Ecopolitical discourse: "environmental security" and political geography.' *Progress in Human Geography*, 16, 503-522.
- <sup>35</sup> United Nations. 1998. *The Causes of Conflict and the Promotion of Durable Peace and Sustainable Development in Africa*. Report of the Secretary General to the United Nations Security Council. New York: United Nations.
- <sup>36</sup> Renner, M. 1996. *Fighting for Survival: Environmental Decline, Social Conflict, and the New Age of Insecurity*. New York: W.W. Norton and Company.
- <sup>37</sup> ACTS is an international policy research organisation based in Nairobi, Kenya.
- <sup>38</sup> Atema 2000.



