






# CONFLICT TRENDS

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As Durban, South Africa, prepares for the 17<sup>th</sup> meeting of the Conference of the Parties to the Kyoto Protocol in November this year, the world is recovering from a series of climate and environmental-related disasters, which have occurred over the past few years. The Indian Ocean tsunami, Hurricane Katrina, the Haiti earthquake, the New Zealand earthquake, the Japanese tsunami and nuclear crisis, among others, have killed and affected millions. At the same time, silent and slower disasters related to the effects of natural and anthropogenic climate and environmental changes are affecting billions – especially poor people who depend on the environment for their livelihood.

Sudden disasters and slow-onset environmental changes have the potential to trigger conflicts, especially in situations where people are already vulnerable and where the socio-economic, political and cultural context exacerbates existing tensions. Water security is a related – and perhaps one of the most serious – strategic issues of our time. Approximately 18 Middle Eastern and North African countries – some already prone to instability and conflict – are at extreme risk of water insecurity. Notwithstanding the potential for conflict in the Middle East and North Africa, some argue that water scarcity and the resultant high food prices are key factors in the Maghreb and Middle East uprisings.

In Asia, glacial retreat in Kashmir is affecting India-Pakistan relations, while in Africa it is uncertain whether the Nile Basin Initiative will weather climate change challenges and other regional political tensions. The Third Pole – or the Hindu-Kush Himalaya region in Asia – is home to 10 major river systems that provide water to more than 20% of the world's population – Bangladeshis, Pakistanis, Afghans, Indians, Chinese, Nepalese and others depend on it. The area is already susceptible to natural disasters and high levels of warming, earthquakes, glacial melting and sea-level rise.

In Africa, in addition to serious water insecurity predicted for sub-Saharan Africa resulting from droughts, desertification and other climatic events, the Nile is the

longest river in the world with the greatest number of riparian states (10) drawing on its water for livelihoods and as a source of energy for industry and homes. Situated in one of the harshest climates in the world, the Nile's sensitivity to climate change and existing tensions over the sharing of its waters also create the potential for conflict.

These global challenges are daunting, and academics, practitioners and policy makers in conflict resolution should not only focus on human responsibility for climate change but, more importantly, on the implications of the environment and climate change for human security and conflict. Our focus should be on providing new knowledge and updated analyses, new policies and practical tools for conflict-sensitive climate change adaptation. Our concern should be for vulnerable individuals and communities, to reduce their vulnerability and prevent and mitigate the effects of environmental change and water insecurity, and thus prevent related conflicts. Our assistance to government and civil society in developing policies and creating interventions to reduce vulnerability and ensuring climate and conflict sensitive adaptation is vital.

As an African conflict resolution organisation that aims to have a global impact and deal with the greatest conflict issues of our time, the African Centre for the Constructive Resolution of Disputes' objective is to play a proactive role in mitigating and preventing climate change-related conflicts. We know that climate change will, at the very least, increase existing stressors and magnify current socio-economic and political factors that could trigger and exacerbate conflict. But how will this happen? What are the dynamics at play? Are there lessons from existing environmental conflicts that could be applied now and in the future to deal with such challenges? These are just some of the questions that we seek to answer, through this publication, and through our ongoing work on this critical topic. **A**

**Vasu Gouden is the Founder and Executive Director of ACCORD.**



# CLIMATE CHANGE–CONFLICT NEXUS: FRAMEWORK FOR POLICY-ORIENTED ACTION

BY WILLIAM TSUMA



UN PHOTO/CARL PURCELL

## Introduction

“The devastating drought that affected large areas of Kenya in 2009 and the upsurge in inter-community violence in the north of the country highlighted an apparent connection between climate change and conflict. However, the evidence-base for this connection is limited and it is therefore imperative to analyze how these factors interact in reality rather than to make assumptions.”<sup>1</sup>

The above quote provides the basis on which this article is written. This article bridges the climate change–conflict gap by providing a framework or lens through which policy-action research on the nexus between climate change and conflict can be designed and implemented.

The framework that is suggested is derived from specific field cases and experiences, as well as a review of relevant literature by both academics and practitioners in the field.

The article begins with a brief discussion of the concept of climate change, as provided by the Intergovernmental Panel on Climate Change (IPCC). This discussion is then linked to climate change hazards, where it is argued that climate change does not happen in a vacuum, but rather it

**Above: The Intergovernmental Panel on Climate Change’s 2007 report recognised that water scarcity has increased and predicted that it will continue to increase in the future.**

is embedded in a socio-ecological system. Climate change hazards, therefore, create imbalances in the socio-ecological system that have the potential to exacerbate or even trigger violence in some contexts. Having laid this foundation, three analysis tools are suggested. These provide a lens through which policy recommendations on the nexus between climate change and conflict can be properly understood.

### Climate Change

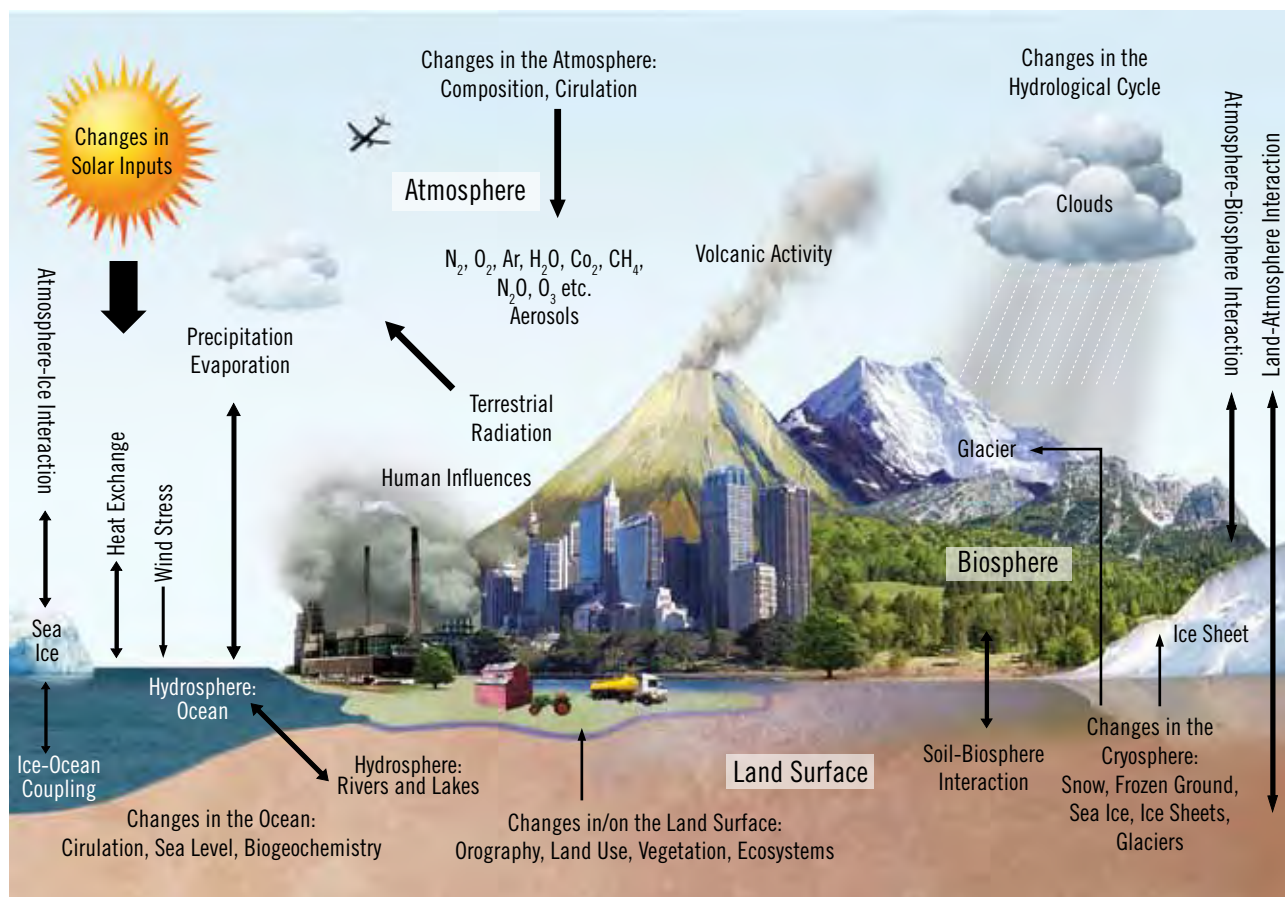
According to the IPCC's historical overview of climate science, in its 2007 report, one must first understand the system of climate (see Figure 1) before understanding what is meant by climate change. Climate in itself refers to the average weather – including temperature variances, precipitation and wind – over a select period of time. It is important to understand that the earth's climate system evolves over time due to natural occurrences, as well as due to human influences. An example of this has led to what is often referred to as global warming, where an increased use and circulation of 'greenhouse' gases – which partially trap long-wave radiation to the earth's surface – have led to a warmer earth surface.

This, in turn, warms surrounding ecosystems and leads to rapidly melting glaciers, which affects all levels of the climate system.<sup>2</sup> Climate change over a period of time then disrupts the normal functioning of the ecosystem that interacts with humans, and affects how they access certain vital resources for their survival.

### Climate Change Hazards as Drivers for Violence

The disruption of the normal functioning of an ecosystem due to climate change is what is referred to as climate change hazards. These include flooding due to heavy rains, erratic weather seasons and, in some areas, prolonged dry spells. What we visualise in reality is then heavy droughts and famine, unproductive farmlands due to water shortage and, in some cases like in Sudan, extended deserts. These climate change hazards or impacts are rarely – if ever – the sole cause of violent conflict. However, the increased evidence of these hazards can be implicated in all phases of the conflict cycle – from contributing to the outbreak and perpetuation of violence to undermining prospects for peace and security.<sup>3</sup> In the following section, some of these hazards are briefly discussed and an argument for how their manifestation

**Figure 1: The Varying Components of the Climate System<sup>4</sup>**







**Expansion of the deserts in Africa has led pastoralists to encroach onto farmlands for water and pasture.**

has the potential for driving conflicts, especially in developing countries, is presented.

**1. Climate Change-induced Environmental Degradation**

Irregular weather patterns, influenced by heavy rainfall in some regions and strong sunshine in others, leads to environmental degradation by lowering the environmental conditions necessary for human survival. Suhrke highlights tensions in Sudan due to the expansion of the desert.<sup>5</sup> According to his analysis, expansion of the desert does not manifest in a vacuum, but rather in a socio-ecological system where people are forced to seek alternative sources of livelihood. He uses the example of nomadic pastoralists, who found themselves increasingly limited and restricted in their search for pasture and water. His analysis revealed that an increase in the incidents of armed violence between pastoralist communities and farming groups was largely due to pastoralists

encroaching onto farmlands for water and pasture. This was because the spreading desert linked to climate change had eradicated all the pasture and water corridors that served as buffers during the dry seasons. This observation is very similar to Saferworld’s<sup>6</sup> view of northern Kenya, as well as Walker’s<sup>7</sup> perspective on the dry stretches in Senegal, where pastoralist and farming disputes have led to violent conflicts.

CLIMATE CHANGE OVER A PERIOD OF TIME THEN DISRUPTS THE NORMAL FUNCTIONING OF THE ECOSYSTEM THAT INTERACTS WITH HUMANS, AND AFFECTS HOW THEY ACCESS CERTAIN VITAL RESOURCES FOR THEIR SURVIVAL

## 2. Climate Change-induced Natural Resource Scarcity

Building on the discussion on environmental degradation, climate change does play a direct role in the shrinkage of key natural resources – for example, land and water. The IPCC's 2007 report places special emphasis on water by looking at water systems, floods and water sources. The report recognises that water scarcity has increased – and is predicted to continue to increase in the future. This can be argued to be an outcome of unusual erratic rainfall patterns, prolonged dry spells and drought. For example, flooding as a climate change hazard reduces the amount of land available for food production and other farm-based activities, while droughts due to erratic and irregular rainfall reduce the water available to communities that depend on rain-fed agriculture and animal-rearing for their livelihoods.<sup>8</sup> This can be a driver for social tensions and violence in some contexts, especially those prone to resource-based conflicts.

A good example is demonstrated in the Kasese and Arua locations of northern Uganda.<sup>9</sup> These two locations depend largely on rain-fed agriculture for both their food production and income-generation activities. A significant number of inhabitants from these two locations rely on large tracks of pasture and water for their pastoralist livelihoods. Empirical evidence from these regions demonstrates that, over a period of time, continued

climate change leading to erratic rainfall has not only reduced the available water for irrigating farm lands, but has also hindered the expansion of pastures for the animal keepers. During the dry seasons, pastoralist communities have had to lead their animals into farmlands in search of pasture – a practice that has led to increased tensions and conflicts between the farming and pastoralist groups.<sup>10</sup> Competition over these scarce resources induced by climate change has, in some cases, resulted in violent and destructive conflict.

## 3. Climate Change-induced Migration

A third dimension for investigating the climate change–conflict nexus is that of migration. Statistics reveal that, in 2008, 1.4 billion of the world's inhabitants in developing countries alone relied on agriculture for their food production and income generation. Close to 98% of the same group were employed in the agricultural sector.<sup>11</sup> The climate change hazards described above either lead to the destruction of land resources through flooding or desertification, on the one hand, and shrinkage of available ecological resources like water, on the other. This has a direct impact on food production and income-generation efforts, while also reducing employment opportunities for the majority of people living in developing countries. Increased food shortages

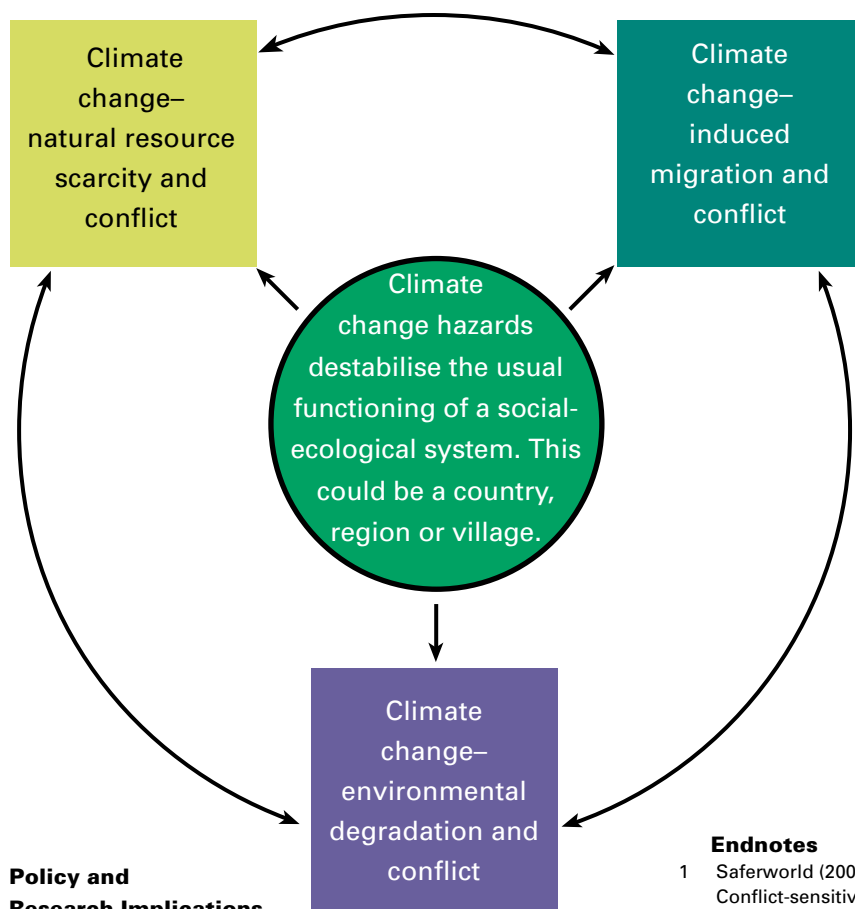


UN PHOTO/JEFFREY FOX

**Erratic rainfall has reduced the available water for irrigating farmlands and hindered the expansion of pastures for animals.**

and the reduction of employment opportunities as a result of diminished farm-based activities has been a cause and source of rapid outward migration in Africa. In Ghana, for example, the movement of rural communities from the drier parts of the northern region, where the rains are erratic, to the more ecologically stable south, has been argued to be a threat to existing resources in the south – leading to social tensions and conflicts.<sup>12</sup> In-migration due to climate change-induced factors is now driving debates on climate change conflict issues. Increased migration generally means that populated areas simply become more populated – especially when there is a movement of people from rural areas to urban areas. The increased concentration of people leads to increased competition, both for natural resources and for government assistance.

**Figure 2: Framework for the Analysis and Understanding of the Climate Change–Conflict Nexus.**



**Policy and Research Implications**

This article began by arguing that scientific and policy-related research needs to invest in documenting specific cases as evidence, to demonstrate the links between climate change and armed violence. The relationship needs to be grounded on the systematic analysis of trends and how these relate to human behaviour and choices. The framework proposed

in Figure 2 is a framework of analysis that could guide the work of such research efforts. While understanding that climate hazards provide useful evidence about environmental change, investigating how these hazards influence human behaviour in terms of people’s choices and actions in pursuit of their livelihoods will be crucial. Climate change, as discussed in this article, leads to environmental degradation, which has an impact on available natural resources. Competing livelihood systems in communities – especially those residing in fragile ecological systems – are subjected to stiff competition, leading to social tensions and, in some cases, violence. In other incidences, environmentally induced migration – be it by nomadic communities, farming groups or displaced people – has contributed to competition over shrinking resources in host communities, and is a recipe for violence. Policy research should, therefore, focus on providing empirical evidence around these three climate change hazards as building blocks towards

understanding the climate change and conflict nexus. From a policy perspective, investments geared at addressing climate change issues ought to integrate conflict-sensitive approaches to resilience or adaptation, to ensure that conflict-prevention measures become an integral aspect of any climate change interventions. ▲

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**Climate change-induced migration is a significant conflict factor in Africa. People move away from climate change hazards to more ecologically stable areas, but the increased concentration of people leads to increased competition for resources and tensions.**

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# CLIMATE CONFLICTS IN THE HORN OF AFRICA?

BY MARCEL LEROY AND FANA GEBRESENBET<sup>1</sup>



As climate change has moved up the political agenda over the last two decades, there has been a concomitant increase in the number of scientific exercises dealing with environmental and climate security. On the broader issue of environmental security, there has been a growing understanding of the ways in which environmental scarcity may trigger violent conflict. Before this debate regarding the role of environmental degradation and scarcity issues in the causation of conflicts was fully settled, however, the more specific aspect of climate change came to the fore. The phenomenon of climate change has socio-economic, political and demographic (through migration) impacts, which many

fear will lead to increased societal tensions and violent conflict.

This article focuses on the climate change–conflict nexus in the Horn of Africa (HoA) – a region that has experienced high conflict levels, and is also prone to climatic fluctuations and natural disasters. Are the two phenomena causally linked? Will the impact of climate change worsen the prospects for stability in the HoA?

**Above: Higher surface temperatures in Africa will negatively affect agricultural productivity and economic performance, thereby raising the incidence of civil unrest and conflicts.**





**The loss of household assets - in particular, livestock - due to droughts, has affected livelihoods and led to widespread famine.**

### **The Fear of Climate Conflicts**

The year 2007 was a watershed in terms of literature on the security aspects of climate change. It was in this year that both the African Union (AU) and the Security Council of the United Nations (UN) held their first-ever debates on the security implications of climate change. The sentiment during the AU debates is best captured by the words of the Ugandan president, Yoweri Museveni. He labelled climate change an “act of aggression by the developed world” and demanded compensation. At the debate in New York, the Namibian representative to the UN, Kaire Mbuende, equated the continued emission of greenhouse gases by the developed world with “low-intensity biological or chemical warfare”. At the same meeting, Margaret Becket, former United Kingdom (UK) Foreign Secretary, recognised that the “consequences [of climate change] reach to the very heart of the security agenda”.<sup>2</sup>

The same year also saw the commissioning of major works on the security implications of climate change by the German and United States (US) governments.<sup>3</sup> The German study focuses on how governance and political systems are expected to be affected by climate change, and identifies four pathways through which climate change and conflict risk may be linked: degradation of freshwater resources;

declining food production; increases in extreme weather events; and environmentally induced migration. The military officers commissioned by the US Department of Defence contend that “projected climate change poses a serious risk to America’s national security”<sup>4</sup>, simultaneously stating that security impacts will be more severe under conditions of weak governance, hence likely to affect the developing world more profoundly.

Politicians and journalists often use more alarmist language when linking climate change and conflict. In 2007, UN Secretary-General Ban Ki Moon called climate change the “culprit” for the Darfur crisis. Following the same line of reasoning, French president Nicolas Sarkozy warned: “If we keep going down this path, climate change will encourage migration.... The Darfur crisis will be only one crisis among dozens of others.”<sup>5</sup>

### **Is There Evidence to Link Climate Change to Conflict?**

Globally, the most convincing work linking climate change and conflict is based on data for the northern hemisphere. Zhang et al.<sup>6</sup> showed that the frequency of conflict between 1400 and 1900 was considerably higher in colder years. This finding applies both to western Europe and to China, with the incidence of conflicts during the Little



Ice Age – in the first half of the 17<sup>th</sup> century – in both regions being about double that for milder periods.

A substantial body of qualitative research tries to establish a link between climate change and conflict, focusing on Africa.<sup>7</sup> Using different warming scenarios, the researchers study which conditions will increase the likelihood and/or the intensity of conflicts. They also attempt to establish pathways through which physical manifestations of climate change may lead to various socio-economic and political impacts – and, if not managed well, to violent conflict. These researchers could be categorised as cautious in linking climate change directly with increased conflict.

Quantitative findings about the security implications of climate change in Africa are not numerous and are rather contradictory. Burke et al.<sup>8</sup> analysed historical temperature and civil war linkages and concluded that temperature increases coincided with a higher incidence of civil war. They expect that higher surface temperatures in Africa will negatively affect agricultural productivity and economic performance, thereby raising the incidence of civil unrest and of conflicts.

Hendrix and Glaser argue that conflict is more likely if climate acts as a trigger (as a result of extremes in climate variability) rather than as a result of long-term trends (climate change). They argue that low rainfall in a given season or

year yields a higher probability of causing conflict in the following year than a continuously decreasing trend over decades. Several authors try to establish migration – induced through climate-affected changes in the environment – as the main pathway through which climate change leads to conflict. However, others report rather different findings, arguing that climate change cannot explain Africa’s civil wars and that – on the basis of a review of rainfall data for several decades – climate change is not the cause of the Darfur crisis.<sup>9</sup>

### **Climate Change in the Horn of Africa**

Lives and livelihoods in the HoA have been severely affected by droughts, which have led to widespread famine, often fanned by ill-conceived socio-economic policies. The ensuing loss of household assets – in particular, livestock – means that households face difficulties in rebuilding their livelihoods even after conditions have improved.

The HoA is home to some of Africa’s poorest people, and is inhabited by the world’s largest remaining concentration of pastoralists. The HoA also exhibits a high level of human insecurity, having witnessed numerous civil and communal wars, as well as several interstate wars – notably between Ethiopia and Somalia (1977–78, 1982) and between Ethiopia and Eritrea (1998–2002).



**An armed herder leads his goats as he looks for pasture in a dry region.**



**Pastoralists and subsistence farmers, who are particularly vulnerable to climate change, are likely to form the bulk of eco-migrants in the Horn of Africa.**

A review by the Institute for Environmental Security (IES)<sup>10</sup> notes the following climatic changes in the HoA over the past few decades: higher night-time temperatures; an increase in rainfall in the northern areas and a decrease in southern areas; and an increase in wet extremes, often causing flooding. Overall, a continued rise in temperatures is expected, alongside an increase in rainfall, more frequent extreme weather events and rising sea levels, putting large numbers in coastal states at risk from inundation and intensification of storm surges.

These climate changes will further affect food security. Pastoralists and subsistence farmers, who are particularly vulnerable, are likely to form the bulk of eco-migrants in the HoA. Migration has been linked to an increased risk of conflict, as it often results in people encroaching onto the land of other tribes or groups, amplifying social tensions. The low level of technological development and limited institutional capacity will further limit the region's ability to adapt to climate change, thereby amplifying its consequences.

Some studies have looked at the relation between climate and the incidence of conflict among pastoralists. One such study<sup>11</sup> found that violent social conflicts (including cattle raiding) in East Africa are most common in wet years. It is not clear, however, whether such a conclusion advances explanation of the link between climate change and conflict, as cattle raiding is linked to complex social traditions such as the payment of dowry to the parents of a prospective bride. The practice seems more related to resource predation than to desperation resulting from resource scarcity. Another study<sup>12</sup>, analysing data from the Conflict Early Warning and Response Mechanism of the Intergovernmental Authority on Development (IGAD-CEWARN), found that vegetation cover rather than precipitation is associated with a higher incidence of cattle raiding in the Karamoja Cluster, situated in the border zones of Kenya, Uganda, Sudan and Ethiopia. Avoiding detection and a lesser need to water animals while tracking them to another destination may have greater explanatory value than the higher rainfall itself.



### **Is Climate Change at the Heart of the Darfur Conflict?**

Given the amount of attention which has been paid to the conflict in Darfur – especially in the mass media – a certain amount of simplification of the issue can be expected, including positing a direct causal link with climate change. In reality, however, the causality of the Darfur conflict can be disaggregated into different levels: the perennial natural resource conflicts, linked with land and water resources and exacerbated by climate change; the struggle between the government and rebel groups over political power and wealth; and the regional cross-border conflicts involving neighbouring states, in particular Chad and Libya.

A research project carried out through the University for Peace Africa Programme has focused on how climate change – as well as environmental and resource factors – contribute to African conflicts, with particular focus on Darfur.<sup>13</sup> Our own research agrees with findings of Darfur-

precipitation was recorded over 80 years. The droughts of 1974–75 and 1984–85 have altered the diverse ecological features of the region.<sup>14</sup>

Both pastoralists and farmers in Darfur have suffered as a result of government failure to ensure an adequate supply of water, and have become more vulnerable to drought. Until the 1970s, western Sudan had a good share of Sudan's total number of water works, ponds and *hafirs* (excavated water storage tanks). Since then, lack of maintenance and failure to provide additional water points has significantly reduced the capacity for watering livestock and for sustaining the human population. This has hampered the traditional migration patterns of pastoralists: if the number of water points is reduced, different population groups and livestock concentrate around the remaining water sources, which leads to localised environmental degradation, and possibly conflict.<sup>15</sup>

AT THE DEBATE IN NEW YORK, THE NAMIBIAN REPRESENTATIVE TO THE UN, KAIRE MBUENDE, EQUATED THE CONTINUED EMISSION OF GREENHOUSE GASES BY THE DEVELOPED WORLD WITH “LOW-INTENSITY BIOLOGICAL OR CHEMICAL WARFARE”

based academics and conclusions of international scholars who have spent many years doing field work in western Sudan: while climate change and extreme weather events may have acted as a risk multiplier, they cannot provide the sole explanation for the sharp increase in intensity of the conflict starting in 2003.

Blaming only climate change reduces the conflict to a process over which the actors on the ground have little or no control, virtually absolving them of responsibility. Such a step is not a genuine explanation: blaming all problems on nature belittles human ingenuity and ignores the role played by social factors and political interests.

Lack of development, coupled with the absence of efficient natural resource management, is the main underlying cause of the Darfur crisis. Darfur and other peripheral areas have been neglected by the Government of Sudan for decades, leading to enormous differences in income levels and political influence across the country. Sudanese governing elites have promoted irrigation schemes located in central Sudan as a way to boost food production and to supply commodities for export, neglecting rain-fed agriculture and pastoralism, which had been the strength of Darfur's economy.

### **Climate, Environment and Governance in Darfur**

Darfur has experienced severe climatic shifts over recent decades. Reduced rainfall has turned marginal grazing land into desert, placing significant stress on the livelihood systems of local groups. In northern Darfur, a 30% drop in

Competing legal systems and institutions are another aspect of the failure of governance. In Darfur, traditional mechanisms for addressing resource conflicts have been superseded by institutions and laws issued under successive Sudanese regimes. Likewise, land-use grants in accordance with customary law were issued by the Sultan of Darfur prior to 1916, and remained in effect after the territory's incorporation into Anglo-Egyptian Sudan. This was the *hakura* system, which governs rights for access to land and bestows responsibilities for managing it, rather than granting exclusive use or ownership. As a result of diverging legislation issued by post-independence administrations, conflicting land-use claims have increased the level of uncertainty and tension.

The struggle between sedentary farmers and nomads, which has often been advanced as the main cause of the conflict, had been contained for centuries through traditional conflict management mechanisms and established rules for access to land and water. It is clear that climatic variations, as well as the governance issues mentioned above, have affected the intensity of disagreements over access to resources. Moreover, a quadrupling of population and livestock numbers over the past 50 years placed great strains on existing land-use arrangements. As a result of overgrazing, low-quality fodder that included invasive species began to dominate – which, in turn, led to intensification of the conflict as herders lacking sufficient grazing resources began to trespass onto the lands of sedentary farmers. Simultaneously, there has been a





**A Sudanese woman from the Mahli village in the southern Darfur region collects rainwater to be used for drinking and cooking.**

rising tendency amongst farmers to cultivate more land to compensate for declining productivity, thus reducing the available stock of land for grazing and affecting the corridors through which nomads move during their annual north-south migrations.

**Adapting to Climate Change in the Horn of Africa**

While climate change is undeniable, its impact throughout Africa has been uneven, with some regions receiving less rainfall while others receive more. Continuing shifts will occur, and the future might not develop along the lines that are currently being predicted. It remains important to carry out ‘reality checks’ and review adaptation strategies and plans on a regular basis.

The link between climate change and conflict similarly needs to be approached with caution. While climatic shifts will strain development efforts and human security in the HoA, the manner in which these effects relate to conflict risks needs to be investigated further. Governance is crucial. The government’s ability to manage and regulate access to natural resources can protect against the ill-effects of climate change and environmental degradation. Strong institutions and leadership limit the consequences of conflict, drought and famine; weak governance worsens the outcomes.

The adaptive capacities of communities in the Sahel and in sub-Saharan Africa to respond to changing climatic and ecological conditions have been quite impressive. Pastoralists have been able to survive by migrating over

wide areas and by adapting livelihood strategies. However, state borders, population increase and global climate change are posing new challenges to traditional adaptation mechanisms. It is important to understand how and to what extent impacts of climate change can be absorbed, and under what circumstances they are likely to lead to strains that contribute to conflicts.

Development efforts in the HoA will have to take account of the risks resulting from climate change. Policies and projects will need to be designed in such a way that they can institute remedial measures to limit the negative consequences of climate change. There is a growing realisation about the need for mainstreaming such an approach into development policy. However, concerted efforts to acquire the understanding upon which to base policies to reduce the security risks of climate change in Africa are just getting off the ground, such as through the Africa, Climate Change and Security Dialogue Process (ACCES), launched in Addis Ababa in October 2010.<sup>16</sup>

Any change presents challenges and offers opportunities. Increased temperatures and altered patterns of precipitation in the HoA will further complicate food security and social stability in the poorest part of the continent. Yet climate change also offers an opportunity to rethink development policy and land use. Adapting agricultural production should be the first priority. While 'climate wars' are rather unlikely in the HoA, domestic stresses resulting in population displacement may cause a substantial amount of upheaval. Approaches to land use that allow the bulk of the rural population to improve their living standards while staying put – such as through agro-forestry and short-cycle vegetable and fodder production – would appear to be a first line of defence. **A**

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# TRANSBOUNDARY RIVERS AND CLIMATE CHANGE: AFRICAN AND ASIAN RIVERS

BY **ASHOK SWAIN AND FLORIAN KRAMPE**

*"WHERE WATER IS BOSS, THE LAND MUST OBEY."*  
African proverb

## **Rivers and Climate Change**

Water is a basic condition for life. It also plays a fundamental role in human development. Besides daily use, it is crucial for agriculture and industry. Inequality of access to the resource as well as its mismanagement undermines welfare, affects human security and creates risk of conflict. Thus, water scarcity is not limited to environment and development concern, it has become part of the political agenda and an important national security issue. However, in spite of many attempts in the post-Cold War period, the global water crisis remains unresolved and water shortages have the potential to threaten global peace, prosperity and

stability. As the World Water Council argues: "This crisis has been aggravated by factors such as accelerating population growth, increasing inequalities, national or regional conflicts and the influence of climate change on the water cycle."<sup>1</sup> Approximately 900 million people already live without clean drinking water, 2.6 billion people lack adequate sanitation, and 2.2 million children die every year from unsafe water related diseases.<sup>2</sup>

**Above: The Kariba Dam, one of the largest in the world, is a hydroelectric dam in the Kariba Gorge of the Zambezi River basin between Zambia and Zimbabwe.**



The origins of the global water crisis are well known and are not limited to climate factors alone. However, the crisis is of such a magnitude that it is growing into an issue of common global concern. This perspective puts the focus on international rivers, as approximately half of the global fresh water is available from 263 international basins in the world: of them, 59 are in Africa and 57 in Asia.<sup>3</sup> About 1 400 million people inhabit river basins that suffer from water stress, defined as less than 1 000m<sup>3</sup>/capita/year.<sup>4</sup> National politics complicate policies towards enhanced river basin management of shared rivers. Moreover, the management of international rivers in different parts of the world cannot follow a particular golden principle, as the value of water, its demand and supply vary from one basin to another.<sup>5</sup> The existing knowledge and institutions we have relating to the governance of international rivers are increasingly turning volatile, due to the increased demand and decreased supply of fresh water. Further adding to the problem, the threat of global climate change has started undermining the ongoing regimes and institutions relating to water sharing and the management of international rivers.<sup>6</sup>

While the exact impact of climate change is not yet known, it will have clear bearing upon access to shared water resources as it affects hydrological cycles from global to local levels. Some regions will become much drier, some wetter. The increase in the global surface temperature,

through the greenhouse effect, is expected to increase the amount of water in the air. As a consequence, droughts will become more frequent, with more and more water vaporising from the land into the air. At the same time, the larger amount of water in the air will produce more intense, heavy precipitation and trigger floods. The results of droughts and floods will cause the resilience of old – and pose new – regional security challenges to states, particularly in Africa and Asia.

Due to mutual dependence, the withdrawal or pollution of river water of one riparian state can potentially not only lead to disputes, but also bring cooperation in the basin. Particularly in the last two decades, several competing riparian countries in Asia and Africa have moved towards establishing regimes and institutions for cooperation. River-sharing agreements for the Zambezi and Nile rivers in Africa and Mekong and Ganges rivers in Asia increased in the 1990s. However, these agreements are presently being severely stressed, due to increasing demand and decreasing supply of water resources. Moreover, the threat of global climate change has raised serious doubts about the future of these agreements. This article takes a macro-comparative perspective on transboundary river issues in Africa and Asia, and outlines foreseeable challenges for regional security, considering the impact of climate change.



REUTERS / THE BIGGER PICTURE

**Droughts, which dry up major rivers and shared water resources, are one of the significant impacts of climate change.**

### **Major Transboundary River Basins in Africa and Asia and Riparian Relations**

The general climate trend suggests an increase in global surface temperatures, but climate data of the twentieth century shows that Africa is and will continuously be warming faster than the global average. Scholars are certain that there will be no generalised, single effect of climate change/variability on Africa, because of the long geographical stretch of the continent. As per the Intergovernmental Panel on Climate Change (IPCC) findings, two regional patterns are likely for Africa. Northern and southern Africa will become much hotter (minimum plus 4°C) and drier (about 10–20% less rain). Eastern and central Africa will experience increased rainfall by about 15%. In general, more regions will often suffer from droughts and floods. Considering the expectation of more frequent droughts and

floods, the forecast of river flows and their interaction with extreme variations in precipitation becomes crucial.

Progressing desertification through increased vapourisation and changing rain weather patterns are cause for concern in riparian states, particularly in the Chad Lake Basin (Niger, Nigeria, Chad, Cameroon and Central African Republic); the Zambezi Basin (Zambia, Angola, Zimbabwe, Malawi, Botswana, Mozambique and Namibia); and the Nile Basin (Rwanda, Burundi, Congo, Tanzania, Kenya, Uganda, Eritrea, Ethiopia, Sudan and Egypt). The real effect of climate change on the flow of river systems in Africa is apparently unpredictable. Nevertheless, specialists estimate that, in drier areas, a decrease in rainfall by 10% would have a severe effect on river systems like the Zambezi and Limpopo in southern Africa. The Zambezi River will be particularly vulnerable to climate change, and already today causes



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**In the Indus Basin, despite a signed water-sharing agreement between India and Pakistan in 1960, water is one of the conflict issues between these riparian countries due to increasing water scarcity in the region.**





**Water pollution, from industrial development along major rivers by upper riparian countries, affects lower riparian states significantly.**

contestation among its riparian countries, particularly between Zambia and Zimbabwe. The Nile Basin is considered by many of having high potential to induce water conflicts in the region, due to increasing water demand and the unequal distribution of water and power in the basin. In 1999, when the World Bank encouraged the Nile Basin states to form the Nile Basin Initiative, there was hope and expectation that shared water resources would bring peace and cooperation in the basin. However, more than a decade later, that dream has not yet been realised. In the face of mounting pressure from upstream countries, Egypt and Sudan are working hard to maintain their historic rights over the Nile water. Ethiopia is trying everything possible to capture its share of the Nile water, which has been denied to it in the past due to its own political and economic weaknesses.

A major challenge to transboundary river cooperation is rooted in national politics. The direct and immediate national security challenges for the economy and the population is sacrificing basin-based cooperation. Agriculture, as the major economic activity in Africa, will be more severely affected by changing climate than the industrial sectors. About 60% of employment in Africa is provided by the agricultural sector –

and, in many countries, this sector accounts for 50% of their gross domestic product (GDP).<sup>7</sup> The agricultural sector is very sensitive to changes in climate – especially to shifting rainfall patterns. Some researchers claim that, by 2020, the crop yield in some countries will have halved and agricultural profits decrease by 90%. The Sahara region is seen as most vulnerable to agricultural losses, which are expected to lose about 2–7% of its GDP. Western and central Africa will lose about 2–4% of overall GDP, while the impact on northern and southern Africa is anticipated to be about 0.4% to 1.3% of overall GDP. Some models suggest a decrease in suitable rain-fed land for crops, and a 5–8% increase in arid or semi-arid land by 2080. It is predicted that, consequently, wheat production will disappear from Africa and maize production in southern Africa will be notably reduced.<sup>8</sup>

In Africa, the scarcity of water resources will affect regional security and increase political tensions foremost among the southern African and Nile Basin states. The water scarcity of rain-fed rivers in Africa – such as the Nile, Orange and Zambezi – will affect the agricultural sector, which dominates African economies, particularly severely. This will lead to challenges in food and water security in the region.



To pre-empt the impact on its populations, states will most likely securitise water and will try to annex as much water as possible unilaterally from the shared sources. This sort of 'water capture' policy will not only harm the existing water-sharing agreements, it might also create new conflicts over water issues. Due to climate change challenges, the scenario of water wars in the near future in parts of Africa cannot be ruled out.

THE NILE BASIN IS CONSIDERED BY MANY OF HAVING HIGH POTENTIAL TO INDUCE WATER CONFLICTS IN THE REGION, DUE TO INCREASING WATER DEMAND AND THE UNEQUAL DISTRIBUTION OF WATER AND POWER IN THE BASIN

Most of Asia is highly populated and also houses a larger number of the world's poor. In recent years, besides the rapidly increasing population, a large part of the continent is also experiencing unprecedented economic growth. The impacts of global climate change are likely to be severe in the near future in many Asian countries, where people are highly dependent on natural resources for their livelihoods. Global climate change presents serious risks to the access of water resources in south and south-east Asia. In particular, the impact of climate change on glaciers will directly affect water flow in many of the major international rivers in these regions. In the Himalayan Basin, due to the increased rate of melting of the glacial area, the water flow in spring has increased and water flow during the remaining seasons – especially during summer when it is most needed – has decreased. The size of the Himalayan glaciers has decreased from 2 077 square kilometres in 1962 to 1 628 square kilometres in 2007, an overall reduction of 21%.<sup>9</sup> This increased rate in glacier melting may add to the run-off of the rivers for some time but, at the same time, it will also bring more snow avalanches and glacial lake outburst floods (GLOFs) at high elevation. This phenomenon will not only pose a risk for the existing dams and other projects at the upper reaches of the river systems, but will also make it difficult to plan any hydro projects in the future. If the present trend continues, rivers originating in the Himalayas will soon experience an increase in the frequency of spring floods and serious flow reduction in the summer months.<sup>10</sup>

Climate change-induced glacier melting will impact some major Asian river basins in particular – such as the Ganges Basin (Nepal, India and Bangladesh); the Indus Basin (India and Pakistan); and the Mekong River (China, Burma, Thailand, Laos, Cambodia and Vietnam). The quantity and

nature of run-off is expected to change substantially in these Himalayan rivers as a result of climate change. While uncertainty remains regarding the accuracy of various climate change predictions, forecasts indicate that changes in climate will further exacerbate the existing variability of water flow in the rivers. Changes in the spatial and temporal distribution of precipitation and temperature are expected to interact in complex ways that change the equilibrium and attributes of run-off that reaches these rivers.

In the Ganges Basin, climate change is expected to increase temperatures, resulting in the retreat of glaciers; increased alteration in the precipitation pattern, which will result in a greater degree and rate of recurrence of droughts and floods; and even lead to a sea-level rise.<sup>11</sup> There is enough water in the Ganges River during the wet season for both major riparian countries (Bangladesh and India) not to argue over the water supply; instead, flood control is their priority. During the dry season (December through May), the water supply dwindles – and during this period, ice and snowmelt from the Himalayas becomes critical. In the Indus Basin, water is one of the main conflict issues between India and Pakistan, with India securing water resources for its growing metropolis areas. While both these hostile neighbours have signed a water-sharing agreement on the Indus in 1960 – due to increasing water scarcity in the region – internal opposition in both countries is growing against the agreement. Islamic fundamentalist groups in Pakistan have been using the water issue to mobilise their support base against India. In the Mekong Basin, upper riparian China requires huge amounts of water to support its immense economic growth. This has severe effects on the lower riparian states along the Mekong, which experience extreme water variability because of the construction of major dams on the Chinese side. The Mekong, Indus and Ganges are also experiencing severe floods through heavy rains, as seen in 2010. At the same time, water pollution through industrial use is extreme and affects the lower riparian states. Increasing uncertainty over the availability of water from rainfall, river run-off and groundwater recharge due to the impact of climatic change poses a serious threat to food security in Asia. Overall, the management of international rivers in Asia is not conducive to long-term water sustainability. Due to climate change, increasing population growth and growing economies, riparian countries are taking – and will take – unilateral actions to secure water resources, while potentially damaging the river as well as relations between riparian states.

The sharing of international rivers in Asia in the face of climate change might also lead to the same regional security tensions as in Africa, considering Asia's need to feed its large population. But such tensions might be not of the same intensity as anticipated for Africa. The reason for this is that the international river basin countries in Asia may be able to adapt to climate change challenges better than their African counterparts:

1. Many countries in these major Asian river basins, particularly China and India, are gradually shifting their economic focus from the agricultural sector to the industrial sector. Industry consumes much less water than agriculture. Thus, this economic shift might help Asian countries to adapt better to water scarcity challenges.
2. Climate change raises the certain possibility of large-scale variation in the water flow of shared river systems. With the help of large water development projects, basin countries might be able to address these run-off variations and uncertainty, at least for some time. Most Asian countries also possess better technological strength and larger financial capability to meet these climate change-induced water management challenges.
3. Climate change is rapidly emerging as a critical issue in the sharing of international river water negotiation processes. Many large Asian riparian countries possess sufficient numbers of qualified diplomats to negotiate successfully complex climate change challenges over their shared water resources compared to African basin states, thus decreasing their risk of violent water conflicts.

### Addressing Climate Change Challenges

Without a doubt, Africa and Asia's transboundary river management is advancing towards uncertain times with the increasing impact of climate change. To sustain and develop the resource that satisfies a basic condition of life will be the biggest challenge for basin states in this century. The key to transboundary river management towards cooperation rather than confrontation will be the smart governance of natural resources, and how politics deals with water issues and emerging threats. While Asia might be slightly more resourceful, it is likely to face the same challenges and tensions that are almost inevitable for Africa.

The existing water-sharing regimes in Africa and Asia do not have the capacity to address the emerging challenges that climate change will pose. Most of the ongoing cooperation in the international river basins in Asia and Africa originated from the active involvement of international donor agencies. Many of these initiatives only barely survive because of external help and assistance. Such reliance on minimal external help alone exposes the lack of interest of the basin states in Asia and Africa in creating effective and sustainable management of shared river resources. To address the imminent problems of the existing water crisis – and the massive change in the run-off structure due to climate change – the ownership and, most importantly, the accountability of transboundary water management must be restored back to the countries in the regions. Of course, the international community should not stay out of regional water-sharing politics entirely, but must start to encourage riparian countries to find distinct emancipatory approaches

to basin-based river management. These approaches should address the regions' unique culture and history, as well as their economic disparity and ecological sensitivities. **A**

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# KEY SOCIAL VULNERABILITIES TO CLIMATE CHANGE IN SOUTH AFRICA'S COASTAL ZONES: THE POTENTIAL FOR CONFLICT

BY FATHIMA AHMED

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## Introduction

South Africa's 3 000 km coastline extends from Namibia's border in the west to Mozambique in the east, and comprises diverse climatic and biodiversity patterns. These natural endowments have facilitated coastal development in terms of infrastructure and business (industry, mining, ports, fisheries, tourism and real estate). South Africa is currently emerging as an important investor destination with an unparalleled spatial focus on the coast, with more development imminent. However, coastal development trends suggest that coastal areas are being largely transformed and that the natural resource base is being degraded as a result.<sup>1</sup> Hence, the coast is often subject to a plethora of conflicting user groups

competing for access to relatively unspoiled portions of the coastline, but are frequently also exposed to ecosystem degradation and/or over-exploitation.

South Africa is also diverse in terms of its socio-economic and institutional settings, largely reconstructed in the aftermath of apartheid, which denied the majority access to coastal resources and services. Apartheid's legacy has left sharply divided socio-spatial patterns of development and underdevelopment along the coast, where

**Above: Coastal development trends indicate that coastal areas are being significantly transformed and the natural resource base is being degraded as a result.**



**Coastal poverty is particularly severe in rural coastal areas.**

the majority – mainly black Africans – remain trapped in vicious cycles of poverty and environmental degradation.<sup>2</sup> Hence, South Africa's coastal society is marked by varied levels of inequalities, which suggest that divergent levels of social vulnerabilities require consideration in climate change dialogues. In terms of its institutional setting, restructuring since 1994 has witnessed significant changes in policy and legislation, with specific environmental management mandates and a significantly revised development agenda. However, an undeniable tension exists between the need to introduce environmental issues and concerns into planning and decision-making processes (often for the first time), and the need to accelerate development to address significant socioeconomic needs.<sup>3</sup> As Roberts states: "This tension is exacerbated by the fact that environmental concerns are regarded as being of less significance than development priorities in South Africa."<sup>4</sup>

Coastal poverty is particularly severe in rural coastal areas (southern Cape, Eastern Cape and northern KwaZulu-Natal), former homelands and informal settlements within cities.<sup>5</sup> A situation analysis conducted by the United Nations Development Program (UNDP) in 2006 revealed the following on South Africa: persistently high unemployment rate (29%);

poverty (34% subsisting on less than US\$2/day); large wealth disparities (Gini coefficient of 0.59); high HIV/AIDS infection rates; a dual formal/informal economy; low skills base and wide urban/rural disparities.<sup>6</sup> The coast is a huge contributor to the country's gross domestic product (GDP). The economic benefits that South African society derives from its coastal ecosystems reflect contributions of an estimated 35% (R168 billion) annually to the GDP from direct benefits, and a further 28% (R134 billion) from indirect benefits.<sup>7</sup> South Africa's coastal urban centres (Durban, Port Elizabeth, Cape Town and Richards Bay) lend themselves to ports and infrastructure, property development, industry, tourism and net in-migration of jobseekers, and have a significant role in meeting the basic needs and improving the well-being of coastal communities, where 40% of the country's population is located.<sup>8</sup> However, GDP alone is not an effective measure of development. It does not, for example, reflect social costs (health problems resulting from environmental degradation), income distribution and the destruction of ecosystems, borne largely by the poor.

Climate change is now an accepted reality and is being incorporated into policies in South Africa, albeit focusing largely on mitigation (energy efficiency, power generation,



sustainable transport, and waste management) rather than adaptation. While mitigation is necessary, South Africa's coastline is increasingly prone to the realities of climate change impacts – including sea level rise, severe storm events, shoreline erosion and coastal resource degradation, which is linked to increasing human transformation of the coastline.<sup>9</sup> Without adaptation, there will be dire consequences for society and the economy, exacerbating already existing inequalities and, ultimately, sustainability.

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**Shoreline erosion is a reality of climate change and impacts South Africa's coastline.**

Competition for resources in the coastal zone and divergent institutional factors, set against the backdrop of climate change, can trigger and exacerbate conflicts over natural resources.<sup>10</sup> At their most extreme, environmental conflicts can escalate into violence, but often emerge as nonviolent, yet destructive issues that impede social equality and sustainable development.<sup>11</sup>

### **Social Vulnerabilities to Ecosystem Change and Potential Conflicts**

Barnett and Adger<sup>12</sup> draw significant negative feedback between increased human dependence on climate-sensitive forms of natural capital (such as coastal zones) as opposed to economic and/or social capital, and exposure to risk from climate change and the ability to adapt to changes in ecosystem goods and services. Celliers and Mackay<sup>13</sup> link the rapid transformation of South Africa's coastline directly to human dependence on the coast's relatively untapped natural capital, that is, "the natural coastal environment... [with] most valuable and marketable assets". They assert that key economic sectors – such as mining – are becoming coastal dependent, and are severely exploiting and degrading the natural resource base. Ecosystem degradation on a continual and long-term basis – such as poor-quality water supply, energy overuse with dependence on non-renewable supplies, and even poverty – could increase

**COMPETITION FOR RESOURCES IN THE COASTAL ZONE AND DIVERGENT INSTITUTIONAL FACTORS, SET AGAINST THE BACKDROP OF CLIMATE CHANGE, CAN TRIGGER AND EXACERBATE CONFLICTS OVER NATURAL RESOURCES**

society's inability to cope with climate change. Many aspects of such ecosystem degradation are a part of life for larger society.

Green<sup>14</sup> argues that technical language used by science to communicate adaptation is less action-oriented, and a middle ground can be found in the concept of 'risk' as a more effective communication strategy ("risk of what?", "risk to whom?" and "risk when?") when identifying vulnerability to climate change. Green expands: "Furthermore, 'risk' captures the inherently uncertain nature of the future, and is widely grasped by stakeholders in government, the private sector and the public."<sup>15</sup>

Cartwright<sup>16</sup> states that direct risks from the impacts of climate change are not borne by the poor, as the legacy of apartheid's space-economy witnesses much of the country's coastal property under the ownership of affluent people and local authorities. The local authorities experience risk, either directly or indirectly, as:

- vulnerability to direct physical impacts, which involves risk to infrastructure, amenities, property and loss of human life, typically manifesting during or in the hours immediately after an extreme event; and
- vulnerability to indirect impacts, resulting from biophysical risks, and sometimes as the result of the biophysical risks on markets and governance – which includes tourism losses, the reallocation of the fiscus towards disaster relief at the expense of planned development, higher insurance premiums for coastal property, impacts on fisheries and withheld investment.

However, the vulnerability of the poor to climate change impacts (including undermining security) manifest indirectly through maladaptation, by way of access to housing, insurance, mobility and migration, resource degradation (particularly linked to the quantity and quality of water) and loss to livelihoods. This is all disproportionately borne by poor people. Green<sup>17</sup> identifies water as South Africa’s key adaptation challenge to climate change, highlighting the detrimental impacts currently witnessed with water: flooding, shortages leading to power cuts, interruptions to suppliers of key inputs and increases in stakeholder conflict. Furthermore, detrimental impacts relating to water already suffered represent 88% of the South African average, as compared to 39% globally.<sup>18</sup>

The combination of non-climatic stressors acting on ecosystems such as poverty, inequalities and institutional weaknesses are significant in developing countries – particularly on the poor within these countries – and could heighten social vulnerability and potential conflict under

CLIMATE CHANGE IS NOW AN ACCEPTED REALITY AND IS BEING INCORPORATED INTO POLICIES IN SOUTH AFRICA, ALBEIT FOCUSING LARGELY ON MITIGATION (ENERGY EFFICIENCY, POWER GENERATION, SUSTAINABLE TRANSPORT, AND WASTE MANAGEMENT) RATHER THAN ADAPTATION

conditions of climate change. Barnett and Adger<sup>19</sup> draw attention to the imminent interaction between climate change, human security and conflict by integrating three key aspects of research on the vulnerability of local places and social groups to climate change, on livelihoods and conflict, and the role of the state in development and peacemaking (see Table 1). What the authors fail to integrate are the gender implications of climate change on society and livelihoods. Women in sub-Saharan Africa have a higher prevalence of HIV/AIDS than men, and 80% of the 45 million refugees are women and children. In addition, women are under-represented in decision-making, represent two-thirds of the world’s illiterate, are increasingly becoming heads of households and are often more subject to violence.<sup>20</sup> Women’s situations are often characterised by a lack of

**Table 1: The Relationship between Determinants of Human Insecurity, Conflict and Climate Change**

Factors affecting conflict	Processes that climate change could affect/exacerbate
Vulnerable livelihoods	Climate change is likely to have widespread impacts on water availability in coastal regions and food security, and cause extreme events and diseases. Impacts on livelihoods will be significant amongst the population with high resource dependency, and in more environmentally and socially marginalised areas. Some climate-driven impacts are long-term and chronic (declining productivity of agricultural land), while others are episodic (floods).
Poverty (relative/chronic/transitory)	Poverty (particularly relative deprivation) is affected by the spatial differentiation of climate impacts and the sensitivity of places to them. Climate change may directly increase absolute, relative and transient poverty by undermining access to natural capital. It may indirectly increase poverty through its effects on resource sectors and the ability of governments to provide social safety nets. Stresses from climate change will differentially affect those made vulnerable by political-economic processes.
Weak states	The impacts of climate change are likely to increase the costs of providing public infrastructure such as water resources and services, and may decrease government revenues, thereby decreasing government capacities to adapt and respond to climate change.
Migration	Migration, in conjunction with politically induced loss of socio-economic opportunities, may be a response of people whose livelihoods are undermined by climate change, and may increase the risk of conflict in host communities.

Source: adapted from Barnett and Adger<sup>21</sup>





**Water is a key adaptation challenge to climate change. One of the significant detrimental impacts that is experienced in South Africa's coastal areas is flooding.**

control or ownership of, and access to, resources – and, hence, they represent the most vulnerable of the vulnerable.

Cumulatively, non-climatic stressors have sensitised climate change agendas from being perceived as an environmental risk to becoming a growing threat to development and sustainability. The relationship between the determinants of human insecurity, conflict and climate change have particular significance to South Africa, which is constitutionally a rights-based society and a local partner in the global compact concerned with human rights and sustainability; for example, the Plan of Implementation and the United Nations Millennium Declaration. Celliers and MacKay<sup>22</sup> caution that the current South African coastal socio-spatial status is unsustainable, where development for progress (benefits for all) and development causing communal regression (benefit to a select few in the short term) are likely to accrue impacts for both present and future generations.

### **Adaptation to Climate Change**

Adaptation refers to the ability of a system (ecological, social or economic) to respond to actual or expected climate change impacts in order to mitigate potential damages and/or leverage opportunities. It necessitates change in the processes, practices and structures that perpetuate the problems. Activities required for the enhancement of adaptive capacity are essentially equivalent to those promoting sustainable development, including:<sup>23</sup>

- Economic wealth – There is a wide perception that wealthy countries, with better economic resources, are better prepared to fit the costs of adaptation to climate change impacts and risks than poorer countries.<sup>24</sup> There is also evidence that poorer countries and disadvantaged groups within them are especially vulnerable to disasters.<sup>25</sup>
- Technology – Adaptive capacity is likely to vary, depending on availability and access to technology (warning systems, protective structures, settlement relocation) at various levels and in all sectors.<sup>26</sup>
- Information and skills – There needs to be adequate capacity to respond to climate change adaptation. Skills enable people to diversify livelihoods and options, thereby reducing their vulnerability. There needs to be collaboration between science and the economics of climate change in adaptation planning, and stakeholder participation is a requirement. The awareness and education of stakeholders to impacts of climate change, mitigation and adaptation is crucial.
- Infrastructure – The poor siting of infrastructure can contribute to impacts of climate change, such as the erection of artificial structures to combat sea-level rise or the planning of development in sensitive locations. A lack of necessary infrastructure – such as drainage – can amplify impacts such as flooding. Infrastructure includes natural capital such as dune cordons, which should be maintained to buffer impacts of change. Furthermore, access to public infrastructure like



**Climate change is likely to have widespread impacts on water availability and food security, in coastal regions.**

housing and transport equips people better to adapt to changes.

- Institutions – In general, countries with well-developed social institutions tend to have greater adaptive capacity than those with less effective institutional arrangements. The South African institutional and policy environment indicates that a middle ground needs to be identified between prioritising either ‘environment’ or ‘development’. Disclosure – by government, institutions and sectors – over the state of natural resources, for example, water, needs to be evident. There is, furthermore, a lack of discussion on business as a stakeholder in climate change. By contributing to climate change, business is part of the problem – and also part of the solution. A recognition of the role of business as a source of finance, provider of solutions and the bearer of risks is needed.<sup>27</sup>
- Equity – Entitlement and access to resources need to be equitably distributed. The benefits are immediate as well as long term.

According to Theron and Rossouw,<sup>28</sup> “locally applicable methods to mitigate the impacts of climate change have to be developed urgently to quantify realistically the impacts along South Africa’s coast.” Furthermore, the authors state that mitigation necessitates “an understanding of the adaptation options available to South African society, which is considerably different from first world approaches and still largely undefined”.<sup>29</sup>

### Conclusion

South Africa’s coastal zones reflect characteristics that define both their value and vulnerability, which challenges the notion of disaggregating the role of climate change from other environmental, socio-economic and political factors, if at all possible. Ecosystems underpin socio-economic development; however, almost exclusive reliance on ecosystems that are subject to climate change can create risks for development and exacerbate conflicts. This article underlines the premise that water presents the biggest challenge to climate change adaptation. Green<sup>30</sup> underscores the need to consider aspects such as the geography of water, nature and source, impacts on other sectors and stakeholders. Furthermore, while a situation analysis is readily available, there exists a research gap on actual and perceived vulnerabilities to climate change impacts in the South African coastal context, and this requires more detailed and context-specific research.

Adaptation strategies are likely to be implemented only if they are integrated with decisions that address non-climatic stresses, and necessitate the inclusion of all stakeholders. Burton<sup>31</sup> suggests the following factors for urgent action-oriented adaptation:

- Climate change cannot be totally avoided.
- Anticipatory and precautionary adaptation is more effective and less costly than last-minute, emergency adaptation or retrofitting.
- Climate change may be more rapid and pronounced than current estimates suggest, and unexpected events are possible.
- Immediate benefits can be gained from better adaptation to climate variability and extremes.
- Immediate benefits can be gained by removing maladaptive policies and practices.
- Climate change brings opportunities as well as threats.
- Future benefits can result from climate change.

With regard to the last three points above (immediate and future benefits), although climate change exacerbates impacts, it may underscore the significance of adaptation enough – and set the level of ambition higher within institutions and the public – to help avoid damage from far more than extreme climate events. For example, preparing for a once-in-100-years event means that people are ready for a once-in-10-years event.<sup>32</sup>



In order to endorse the welfare and livelihoods of the poorest and most susceptible members of South African society and mitigate potential conflicts, climate adaptation strategies cannot obviate from aligning with equity goals – for example, by improving food security and improving access to safe water and healthcare. A strategy is, therefore, required that will enable the use of coastal resources to take place in a manner which is both constitutionally democratic and essential. **A**

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# ADDRESSING CLIMATE-RELATED CONFLICT: HUMAN SECURITY AND LESSONS FROM THE SOUTHERN SAHELIAN BELT OF SUDAN

BY SALOMÉ BRONKHORST



UN PHOTO / B WOLFF

## Introduction

While sceptics and alarmists waste time over whether humans are responsible for climate change, we have been presented with strong evidence that our world will experience a range of positive and negative climatic effects which will affect the lives of millions. Some regions will become dryer, with more rapid desertification; others will get wetter and warmer, improving conditions and extending planting seasons. The effects of climate change – droughts, desertification, precipitation changes and other weather events – especially affect societies where people depend on the environment to make a living and where they lack the capacity to cope, prevent or adapt to sudden or slower, systematic changes. In Africa, and especially sub-Saharan Africa, where the environment is the main source of livelihood for the poor, conflicts – related to the environment and other socio-economic and

political factors – are common. It is likely, therefore, that additional environmental stress factors brought about by climatic changes will exacerbate conflicts or lead to new ones.<sup>1</sup> Practitioners and policy makers in the fields of conflict resolution, peacebuilding, development and adaptation, to name a few, should therefore develop measures to assist African communities to prevent and mitigate environment and other related conflicts and to create conditions for stability and peace.

This article makes two arguments. First, given the complexity of conflicts and climate–conflict linkages the

**Above: The effects of climate change especially affect societies where people depend on the environment to make a living.**





**Southern Kordofan is a semi-arid state and desertification is a notable environmental stress.**

resultant need for interdisciplinary human security approaches, with their wider applicability, may be particularly suitable for research, policy development and practical intervention. Second, by applying a revised human security framework in a study of interventions by non-governmental organisations (NGOs) that address environmental conflicts in the southern Sahelian belt of Sudan, potential lessons for climate change adaptation policy and conflict resolution have been identified. This article focuses on one of the highlights from that study, and argues that the use of traditional conflict resolution (TCR) mechanisms reduce vulnerability and improve human security in the southern Sahelian belt of Sudan – and, therefore, may contribute to the resolution of future climate-related conflicts.

A report of the aforementioned study will be published by the African Centre for the Constructive Resolution of Disputes (ACCORD) in 2011. The study was driven by the premise that important lessons for addressing climate-related conflicts may be identified from interventions in environment-related conflicts. In the report (and this article), ‘climate change’ refers to natural changes in climate over time, or changes in climate that result from human activity. ‘Environmental change’ refers to climate change and its effects on the environment and/or to

non climate-related changes in the environment as a result of human activity – such as deforestation.

The study focuses on the southern Sahelian belt that stretches across Africa and across Sudan – in particular, the semi-arid state of Southern Kordofan and its neighbours. This geographical area is potentially relevant for identifying how measures to resolve environment-related conflicts can be applied in other areas, where climate change impacts – drought, desertification, water scarcity, competition over grazing and pasture – can contribute to conflict. These Sahelian areas have already experienced climatic changes,<sup>2</sup> historical environmental stresses such as desertification, and competition between farmers and pastoralists over water and arable land for grazing and farming. The conflict dynamics, coping and conflict resolution mechanisms communities have developed, and ongoing work by civil society across the Sahelian belt of Sudan to address such conflicts may provide us with a wealth of new knowledge and lessons, applicable for resolving climate-related conflicts. The research focused on conflicts between and within pastoral and farmer groups where climate and environmental factors are key conflict drivers. The approach taken, therefore, is that we



**The grasslands in South Sudan are burned seasonally by pastoralists to bring on a flush of green grass for their cattle.**

may not know which climate and environmental changes are anthropogenic or not, but the conflicts that stem from them provide instructive examples of their social, political, economic and other impacts; and what has worked in resolving such conflicts.

### **Human Security**

Although environmental change is not a new phenomenon, the likely scale, suddenness and depth of changes predicted and their effects are unprecedented. Our existing tools and solutions may very well not be able to cope with or be suitable for the additional complexity – especially at a local level, where the impacts of climate change will be felt first. Moreover, the magnified impacts and effects will give more prominence to security and other multidisciplinary dimensions of climate change. Also, there is already broad consensus that the environment and climate can contribute to conflict – or be an underlying trigger – but that it will rarely be the only variable in question, increasing the complexity. In response, we need approaches that will help individuals and communities cope, prevent or adapt to climate change, and which take into consideration each unique and complex socio-economic, political, cultural and structural context.

Human security approaches help us deal with these complexities and challenges by providing a multidisciplinary and normative approach that considers ‘hard security’ (monopoly over the use of force and military power), but also human development and well-being. Therefore, it may be an ideal approach to prevent, analyse and intervene in complex conflicts related to climate change. Given prominence by the United Nations Development Programme (UNDP) in 1994, human security refers to “the security of individuals and communities, expressed as both ‘freedom from fear’ [broadly, security] and ‘freedom from want’ [broadly, development]”.<sup>3</sup> It moves beyond traditional hard security to include political security (human rights, the rule of law) and social security (alternatives, such as economic and social safety nets or development).<sup>4</sup> By placing a greater focus on the security of individuals rather than the state, the UNDP proposed that the scope of security should be broadened to include seven threats to an individual or community’s human security – economic, food, personal, environment, health, community and political security.

Human security is also particularly appropriate for Africa. Climate change aside, Africans have experienced an entire range of social, economic, political, environmental and





**A young pastoralist carries an AK-47 rifle. Conflict between pastoralists and farmers over water and arable land for grazing and farming is common in the Sahelian region.**

cultural hardships as a result of interstate and intrastate wars, environmental degradation, poor governance, economic uncertainty, inequality and a myriad other global, national and local reasons. Human security's wider applicability and broader focus is, therefore, particularly appropriate for such complexity, which is exacerbated by the effects of climate change, and by the uncertainty around the future impacts of climate change. Moreover, human security is also compatible with the natural humanism tradition of Africa, which focuses on philosophies that echo human security – such as mental, physical and spiritual health; food and environmental security; protection from criminal and external threats; and access to social and community services.<sup>5</sup>

That said, human security as an approach to security has gained significant momentum over the years, but has also elicited criticism from numerous researchers in different fields, including security and development practitioners and feminists.<sup>6</sup> Many argue that the academic and policy communities still lack rigorous tools for analysis and that, although human security's wide applicability is useful in a number of issues, the sheer number of threats or variables required to account for the seven threats proposed by the

UNDP, limit the applicability and affect the rigour of human security. Others have worked to narrow the concept to make it more workable and rigorous,<sup>7</sup> with most researchers seeking to reduce the number of variables or threats, and introducing different indicators and frameworks to operationalise the concept better.

The 'deprivation–vulnerability' approach, proposed by Busumtwi-Sam, is a framework to operationalise a development-oriented approach to human security that establishes clear research and policy priorities.<sup>8</sup> By providing a narrower conceptualisation of human security, the approach addresses the inherent weaknesses of the broader conceptualisation. It makes a conceptual distinction between human development and human security and, as a result, highlights the usefulness of the human security concept. The author argues that, while human security and human development are discrete, they are mutually reinforcing. Human development is a longer-term *process* that works to improve health and well-being, livelihoods, dignity, survival, safety and knowledge, for example. Human security is a *condition* that expresses the "relative presence/absence (or increase/decrease) of contingencies that threaten physical



**“Hafir” is the Sudanese name for a water reservoir, which is designed to store water runoff after a rainy season.**

and psychosocial harms affecting human dignity, livelihoods, safety, survival and health and well-being in the political, economic, socio-cultural and ecological contexts within which processes of human development take place”.<sup>9</sup> In simpler terms, human (in)security is a state, determined by threats that can cause harm, but those threats can only harm if the unique context a person find themselves in does not provide them with the means/ability to cope with or mitigate the threat. Whether that person is in a state of security or insecurity, therefore, depends on a minimum threshold of ‘dignity, safety/survival, health and well-being and livelihood’. The author argues that thresholds will effectively be determined by the institutions (governments, international organisations and NGOs, for instance) addressing the issue of human (in) security at that point in time. The underlying logic of this is that the same threat in different contexts may lead people to experience different states of either security or insecurity.

The deprivation–vulnerability approach thus considers threats, deprivations and exclusions, and vulnerability. In the study and this article, ‘environmental threats’ refer to the impacts of climatic and/or environmental change – such as water scarcity, droughts, desertification – and includes competition over land for grazing and farming, and human-induced changes such as deforestation. ‘Deprivations and exclusions’ refer to development indicators and other forms of horizontal or vertical inequalities – including poverty, social exclusion, marginalisation, a lack of livelihood alternatives, and so on. ‘Vulnerability’ here has been defined as a person or group’s ‘exposure, sensitivity and resilience’ to a threat, in the context of deprivations and exclusions. Vulnerability

is essentially the likelihood of suffering harm from a specific threat in the context of particular deprivations and exclusions.

### **Findings and Recommendations**

This framework of analysis was applied to the work of local and international NGOs that resolve climate- and environment-related conflict. The outcomes from the study highlight that NGO projects which focus on addressing vulnerabilities, deprivations and exclusions, and environmental threats, improve human security and, therefore, may prevent or mitigate conflicts. Given the complexity of conflicts, projects rarely focus on one element of human insecurity. Therefore, a successful intervention may be the result of different project elements working concurrently and at different scales to improve human security. The findings are discussed in detail in the aforementioned report. The remainder of this article will focus on one of the key findings from the study: the potential utility of TCR methods in resolving climate-related conflicts. However, it would be instructive to consider some of the other findings of the study briefly.

First, some NGOs in the study area successfully address environmental conflicts and human insecurity by intervening directly at the ‘threat’ level. In other words, if water scarcity is identified as the key conflict driver, NGO projects may employ a number of strategies to address this threat – for instance, by drawing on innovative technologies and by creating alternative water sources along livestock routes and near farms. Others may draw on natural resource management approaches to improve the management of the resource, by building the capacity of communities





**A Sudanese woman uses a Water Roller for easy and efficient carrying of water.**

or providing funding and technical expertise or support to local government, to address the threat directly. An example of this is a 'Water for Peace' project in Southern Kordofan, which works with communities and government to ensure enhanced access to safe and adequate water for human and animal consumption, to reduce the conflict between pastoralists and farmers. This is done in different ways: the project provides affordable water at strategic points along the livestock routes, and works towards separating water sources for humans and livestock, easing congestion and preventing conflict by creating alternative water sources in areas of high demand. It also provides capacity and funding to the local government water committee to restore and maintain artesian wells. As noted before, these projects are not undertaken in isolation from others that address other forms of human insecurity. In fact, the Water for Peace project also focuses on reducing vulnerabilities, deprivations and exclusions. By disseminating environmental and health messages, supplemented with indigenous knowledge, and by building toilets and teaching people how to build them cheaply, the overall health and well-being of communities are improved, as well as their water resources. In each village, about 20 households are supported by the project to construct toilets, and one selection criterion is economic: the poorest households – including those that are female-headed – get priority.

Approaches for reducing deprivations and exclusions arise from the 'development' aspect of human security, and appear to be important additional elements to projects that address environmental conflict. For instance, some NGO projects also focus on the creation of alternative livelihoods, by teaching women how to process and sell milk products, or by training male members of communities as paravets. By creating alternatives, NGOs aim to reduce competition over scarce resources, address poverty and, thus, improve human security. In a project in Gedarif state, for instance, one strategy for resolving environmental conflicts involves addressing deforestation and the vulnerability of women by introducing butane gas for cooking. The communities were involved in the design, implementation and monitoring of the butane gas project, and a project to start a seed bank. Both these projects required an initial outlay of funds, in the form of micro credit provided by the NGO to individuals who, once they received an income, then paid back the money or seeds that were loaned.

#### **Traditional Conflict Resolution (TCR)**

In another approach, NGOs reduce vulnerability, improve human security and contribute to the resolution of conflicts by building the capacity of communities and government to resolve environment-related conflicts. To this end, another element of successful NGO interventions in conflicts involves the reintroduction of TCR mechanisms, and their enhancement or supplementation with modern participatory methods.

In the past, TCR and customary land tenure systems prevented and mitigated conflicts between pastoralists

**NGO PROJECTS WHICH FOCUS ON ADDRESSING VULNERABILITIES, DEPRIVATIONS AND EXCLUSIONS, AND ENVIRONMENTAL THREATS, IMPROVE HUMAN SECURITY AND, THEREFORE, MAY PREVENT OR MITIGATE CONFLICTS**

and farmers in Sudan. Sadly, however, the drawn-out civil war and small arms proliferation, and greater competition over more scarce resources and ever larger herds, have increased the stakes in conflict and have led to some erosion of TCR methods.<sup>10</sup> These methods have been undermined further by competing modern and traditional legal systems, the inevitable rise of modernity, and the weakening of customary mediation by the government and political interest groups.<sup>11</sup> The native authority, for instance, although recently reinstated, was absent for 20 years and presently suffers from a lack of human and financial resources, "undermin[ing] its position in the people's minds and sentiments... in 20 years of its absence the world has

### **Goodiya**

*Goodiya* (also *Judiya/Judiyya*) is used to resolve conflicts in many parts of Sudan by an *Ajawi* (singular, mediator) or *Ajaweed* (mediators). A form of customary mediation or TCR, *Goodiya* in the form of reconciliation conferences or councils, for instance, is used to resolve major conflicts amongst tribes. *Ajaweed* (mediators) are involved, who call on concerned parties, some dignitaries and tribal leaders in a reconciliation conference. The conference suggests solutions that satisfy both parties. If agreements are not reached, other people are invited “who are known for their wisdom, foresightedness (*sic*) and the ability to find suitable solutions for the problems. In most cases, such conflicts rarely reach the official channels of conflict resolution. This is due to the general convention that it is shameful to let outsiders interfere in local affairs.”<sup>15</sup> Minor conflicts are normally resolved by the village sheikhs who, for cases such as crop damage, may, for example, determine the amount of crop damage and the compensation required. *Goodiya* is based on the Koran and the teachings of Prophet Mohammed, and mediators can be persons of high standing in the community, such as village or religious leaders. The mediation usually involves a number of steps:

1. expression of mutual forgiveness by both parties;
2. examples of conflict resolution from the perspective of the Koran are highlighted;
3. a discussion by each of the parties of their side of the story;
4. a way forward is proposed by the mediator and discussed; and
5. the mediation is then concluded by a reading from the Koran.<sup>16</sup>

As part of the process, the mediators will divide themselves into ‘doves’ and ‘hawks’. The doves are the ones that work to create peace, by encouraging parties to forgive and forget, make friendly or symbolic gestures, and provide examples of peaceful coexistence in the past – with considerable references to the Koran, Sudanese proverbs and even explaining how feuds can affect the afterlife. The hawks are the enforcers – the ones that highlight the drawbacks or repercussions of not accepting the ruling of the *Ajaweed*.<sup>17</sup>

changed and native authorities need to upgrade their human capabilities and technical capacities to match the new realities of conflict and its resolution.”<sup>12</sup>

In Southern Kordofan, however, NGO projects that reintroduce TCR while enhancing or supplementing TCR with modern participatory methods, report success in resolving environmental conflict. By employing TCR in *Goodiya* – the local form of mediation – while enhancing this customary method with conflict tree analyses and participatory action plan development, conflicts related to the environment are often successfully resolved. Despite the reported decline in popularity, customary mediation or *Goodiya* is used extensively in Southern Kordofan to resolve climate- and environment-related conflicts between and within pastoral and farmer groups. For example, with the assistance and funding of international organisations, the Southern Kordofan state government usually facilitates reconciliation conferences to resolve major conflicts – most of which have a strong environmental dimension. In working to resolve conflict related to water scarcity and a lack of land for grazing between the Gawamaa, Sebeihat and Baggara tribes in Gargur, one NGO employed *Goodiya* – but used modern participatory techniques to strengthen this TCR mechanism. The participatory techniques helped communities to distinguish between and agree on root conflict causes, core problems and effects; to start a dialogue; and to realise that collaboration would lead to conflict resolution. Techniques used included conflict mapping, a timeline of events and a conflict tree<sup>13</sup> – which reportedly, when drawn by conflicting parties and

compared, showed both parties how their perceptions of a conflict differed. Then, during the negotiation stage, the two communities chose a committee and a chairman that they felt represented them fairly to mediate. From this point, a local form of *Goodiya* was used. Finally, an agreement acceptable to both parties was reached, and signed by representatives of the two parties.<sup>14</sup>

Another organisation utilises the Participatory Action Plan Development (PAPD) as a consensus-building vehicle in its work to resolve environmental conflicts. PAPD combines with *Goodiya* and *Ajaweed* (mediators), and is deemed particularly useful in North Darfur, where water security for grazing and pasture is a key issue. The PAPD complements the *Ajaweed* to reduce resource conflicts, and assists in sensitisation and the development of measures to implement *Ajaweed* decisions.

The six stages of PAPD include:

1. preparation (collection of good background knowledge);
2. problem census and problem prioritisation (by different groups);
3. information gathered about relevant problems;
4. analysis by the community to identify possible solutions;
5. consultation of the wider community for input; and finally,
6. development and implementation of an action plan.

As a tool used by governments and communities to resolve future climate-related conflicts, TCR has the potential to reduce vulnerability and improve human security. It may be especially effective if used alongside measures to address





**The Misseriya community in Goleh village, Sudan, listen to a Ngok Dinka traditional community leader advocating for peaceful co-existence between the Misseriya and their Dinka neighbours on the route they share in search of pasture and water.**

other forms of human insecurity that contribute to a conflict – such as environmental threats, and deprivations and exclusions. Sudan’s rich history of TCR with many remote and tradition-bound communities means that incorporating TCR methods in conflict-sensitive climate adaptation planning for Sudan is likely to receive support from state and federal government, communities and other actors. That said, there are also those who argue that government-sponsored mediations to resolve major conflicts in Sudan may be prone to manipulation by government and others, and may exacerbate conflict. The Sudanese government thus has a key role to play in supporting and sponsoring TCR measures – if it can remain impartial and ensure that ethnic and political rivalries do not derail the process. For the resolution of present environment-related conflicts between pastoralists and farmers, and to improve human security and prevent future conflicts, investment should be made by the federal and Southern Kordofan governments, and international funders, to strengthen existing conflict resolution mechanisms and secure their legitimacy, while improving coordination between different conflict resolution institutions that operate at local, state and federal levels. This should be done as part of Sudan’s climate change

adaptation agenda, and as part of regional cooperation initiatives, given the cross-border nature of pastoralism in the Horn of Africa.


Moreover, without dealing with other forms of human insecurity, it is likely that TCR mechanisms may temporarily halt conflict, but not resolve them – hence, there is a need for multipronged approaches to deal with human insecurity in the complex context of climate change. For climate change conflicts, further research is needed on how TCR methods could be enhanced by modern methods and vice versa, without losing the spirit and legitimacy of TCR. The use of TCR in other environmental conflicts should also be analysed, with a view to determining the conditions in which certain TCR mechanisms may be more useful than others for resolving climate-related conflict.

### **Conclusion**

The complexity of climate and environmental conflict dynamics requires approaches that are able to make sense of the unique impacts of climate change on individuals and communities, and provide tools for policy-makers and practitioners to respond to such conflicts. The deprivation–vulnerability approach to human security provides a

framework that takes account of this complexity, but reconceptualises human security by considering threats, deprivations and exclusions, and vulnerability. This approach, which was applied in Sudan, yielded interesting findings<sup>18</sup> and shows real potential for the study and prevention of future climate-related conflicts.

Moreover, the work of NGOs to address climate- and environment-related conflict in the southern Sahelian belt emphasises that projects that focus on addressing human insecurity may successfully resolve such conflicts. Projects that focus on addressing threats to human security – or which address vulnerability, deprivations and exclusions – report that environmental conflicts are successfully resolved in the short to medium term. This article highlighted, for instance, the potential utility of TCR mechanisms to address present environment-related and possible future climate-related conflicts in Sudan. In contexts where TCR enjoys legitimacy and is supported by other institutional frameworks, it may contribute to the resolution of environmental conflicts. However, customary mechanisms have become eroded over time, and although they continue to be widely used in Sudan, their efficacy is sometimes questioned. Enhancing TCR methods by supplementing them with modern participatory approaches allows such TCR mechanisms to be strengthened and to contribute to the resolution of environmental conflicts. Other approaches to prevent and mitigate environmental conflicts involve intervening in environmental threats, or addressing deprivations and exclusions.

When considering conflict-sensitive climate change adaptations, these findings highlight that solutions to environmental conflicts are rarely simple and usually need to be context-specific if they are going to be successful. The findings also emphasise that different approaches to address human insecurity will be successful in different contexts. Therefore, in the study area, NGO projects often employ a mixture of elements that address threats, vulnerabilities, deprivations and exclusions, with priorities determined by the context. There are those who would argue that this uncertainty is precisely why human security approaches are not useful – more so given that every element of intervention can then be seen as addressing human insecurity, and that it is impossible to determine which intervention was the one that ‘resolved’ the conflict. Admittedly, for academics seeking to find direct causality between a specific set of human security indicators and conflict, this may be problematic. However, for policy makers and practitioners, the NGO projects themselves provide the answers, by accommodating and tending to this uncertainty in their project and programme development. Organisations that report success in resolving environment-related conflict understand the conflicts with which they are dealing, the underlying issues and the environment in which they operate. They avoid over-simplifying conflicts, and this likely contributes to their success. Human security-related analyses and interventions may, thus, be the ideal approach to prevent and resolve present and future climate- and environment-related conflicts. This approach certainly deserves further reflection. 

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## Endnotes

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- 13 The ‘conflict tree’ is a participatory approach where a tree with roots, a trunk and branches are drawn. The participants should decide which issues are the ultimate causes of a conflict (these are the roots). The branches are the impacts or results of the conflict, while the trunk describes the qualities of the conflict (for example: violent, may involve small arms, and so on).
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# ADDRESSING CHARCOAL PRODUCTION, ENVIRONMENTAL DEGRADATION AND COMMUNAL VIOLENCE IN SOMALIA: THE USE OF SOLAR COOKERS IN BANDER BEYLA<sup>1</sup>

BY SHUKRIA DINI

## Introduction

Since 1990, Somalia has experienced statelessness, compounded with armed violence that has led to a high unemployment rate. But another kind of war is going on in Somalia – one that is being waged against the already fragile environment. This war involves the destruction of acacia trees to produce charcoal for the local and international market. Since the collapse of the Somali state, a large number of unemployed men have made their livelihood from charcoal

production. In the absence of government environmental regulation and protection, acacia trees are cut and burnt on a large scale for charcoal, leading to the degradation of Somalia's natural resources. Due to poverty, unemployed

**Above: Charcoal, which is referred to as *dhuxul* in Somali, has been the main cooking energy used by millions of households in Somalia for centuries.**



young men as well as older men – desperate to survive and feed their families – are forced to engage in this business. Charcoal production as a livelihood has led to environmental destruction – and even death.

The first section of this article discusses the effects of charcoal production on the environment, its direct and indirect contributions to violence, and its overall effect on the health of women and girls in war-torn Somalia. The second part of this article discusses a solar cooker project implemented in 2005 in Bander Beyla by Horn Relief International and Sun Fire Cooking Ltd, to benefit 950 tsunami-affected families in the area. Given that charcoal production leads to environmental degradation and conflict as a result of competition for scarce resources – as well as affecting the health of those exposed to its use, and its high cost – the last part of this article assesses the impact of solar cookers as an alternative to using charcoal as cooking fuel.

### **Charcoal Production: A Source of Environmental Destruction and Communal Violence**

Charcoal, which is referred to as *dhuxul* (and firewood as *qoryo*) in Somali, has been the main cooking energy used by millions of households in Somalia for centuries – and will remain so if no alternative energy is introduced. It is becoming difficult for women, who collect firewood, to find it due to denudation. Charcoal production, which involves cutting trees and burning them, is predominantly undertaken by men. The majority of charcoal traders are also men, but there are some women involved in this trade. Dependency on firewood and charcoal is not only destroying Somalia's environment but also negatively impacting the health of women, who are its main users.

In the last two decades, charcoal production has intensified and continues to destroy trees in Somalia, forcing women and young girls to walk long hours to collect firewood. The main trees targeted for charcoal production are acacias, known in Somali as *qurac*. These trees are significant to the survival of this nomadic society, as they provide shade to herds, particularly goats, sheep, cows and donkeys. *Qurac* trees are also used to construct traditional houses. When the Somali state collapsed, men and women who lost their jobs and were displaced turned to charcoal production – a job at which even previously unskilled workers could succeed. The requirement for charcoal production is simply the ability to use physical energy to cut down and burn trees to make charcoal. As a result of massive charcoal production, trees are now rare. In fact, there are towns and villages where no trees are left standing – a testimony to charcoal and firewood dependency and consumption.

Discussions with women in Bander Beyla revealed that firewood is becoming scarce in this region, and that many families have no choice but to buy the commodity from other locales. Interviews with traditional leaders in the area revealed that, without environmental legislation, charcoal producers – who are not concerned about the long-term effects of their



REUTERS / THE BIGGER PICTURE

**Acacia trees are cut and burned on a massive scale, to produce charcoal in Somalia.**

actions on the environment – will continue felling live trees. “The charcoal traders behave as though the environment is insensitive to their greed,” said an elderly man in Bander Beyla. “Their ultimate goal is to make money, oblivious to the devastation they are causing to the environment. Their primary goal is to make profits from cutting and burning trees to make thousands of charcoal sacks.”<sup>2</sup>

The massive destruction of acacia trees will have profound environmental consequences for nomadic families, whose survival is linked to the environment they inhabit. One man, who owns a small herd of goats, said: “There are no trees left in my community where both people and herds can find shade. Trees are stripped off and are now rare. We cannot live without trees, but we continue to destroy them.”<sup>3</sup> When – and if – durable peace is achieved in Somalia, the citizens of this war-ravaged country will face enormous environmental insecurity, which already threatens their well-being and recovery. Environmental insecurity will negatively

affect the ability of a war-affected population to recover from their losses and survive the post-conflict stage.

Charcoal production in Somalia has led to what are known as ‘charcoal wars’, where those who are involved in charcoal production clash with inhabitants of the area where the trees are being cut for charcoal production. The makers of charcoal and those<sup>4</sup> who feel their territory is being invaded by outsiders are armed – a situation that often leads to violence, displacement and even death. Discussions with traditional leaders who are involved in traditional conflict resolution highlighted that there have been a number of conflicts over charcoal production. For example, two groups competing to access a particular location with many trees often end up in a violent clash. Sometimes, the inhabitants of the area may rise against the charcoal producers who destroy their trees. Charcoal wars perpetuate tensions among certain clans, and are a threat to overall security in some regions. Interviews with residents of Bander Beyla town and the surrounding villages noted that, whenever there is a charcoal conflict in an area filled with trees, the supply of charcoal is interrupted, and remote towns and villages that rely on charcoal for cooking are adversely affected. The phenomenon of charcoal wars needs to be investigated more, as there is not enough information on it – particularly the number of displacements and deaths caused. More elaborate research will provide better insights on the impact of such conflicts on communities and the environment.

### **Firewood and Charcoal Consumption, and the Health of Women and Girls**

Dependence on charcoal for cooking is very costly for impoverished families. Women and girls walk long hours to collect firewood to supplement the expensive charcoal. Firewood collection is an arduous, back-breaking task, and is dangerous in a conflict environment where many people are armed. The further women and girls travel in search of scarce firewood, the more vulnerable they are to armed men, who may sexually abuse them. Interviews with women and girls who collect firewood in Bander Beyla and four other villages revealed that they suffer foot, ankle and eye injuries – and even snake bites – as they remove and cut tough and dead wood with axes. In underdeveloped towns and villages where there are no hospitals, such injuries can be deadly for women and girls, or may leave permanent injuries that affect their mobility and, hence, their ability to care for themselves and their families.

It is estimated that each household needs five to seven sacks of charcoal per month, and each sack of charcoal costs about US\$8 to US\$10 – a very expensive commodity for poor families with scant resources who barely cope, and in an armed conflict context. Due to the absence of price control, millions of Somali households that depend on charcoal for energy are at the mercy of charcoal sellers, who gauge the prices for charcoal daily, forcing poor families to spend more money on charcoal than on other necessities.

One woman points out: “Imagine you have to divert your meagre resources to purchasing sacks of charcoal because there is no firewood available in the area where we live, and you have no money left to buy food for your family. You will see many neighbours who have charcoal but no food to cook.”<sup>5</sup> Another woman says: “After we purchase charcoal, we may only afford to prepare one meal a day.”<sup>6</sup> Money needed to purchase food is channelled to buying charcoal and, therefore, charcoal consumption negatively affects the food consumption of poor families. In addition, charcoal usage directly affects the health of women and girls, who do the cooking for their families. They are exposed to black dust, smoke and soot inhalation, which affects their respiratory system and eyesight.

The good news is that there is alternative cooking energy available in the form of solar power, which is environmentally friendly and safe, for the health and well-being of women,



UNPHOTO/KAY MULDOON

**Firewood collection is an arduous, back-breaking task, and is dangerous in a conflict environment where many people are armed.**





**A woman buys charcoal from a trader at a charcoal market; each bag costs about US\$8 to US\$10.**

girls and their families. Solar cookers also enable households' dependency on charcoal and firewood to be minimised and, consequently, their food consumption to be improved.

The following section discusses a solar cooker project implemented in Bander Beyla and four neighbouring villages affected by the 2004 tsunami, and its impact on these communities.

**Preventing Violence and Protecting the Environment through Solar Cookers**

Horn Relief International and Sun Fire Cooking Ltd's solar cooker project was unique, and was the first project of this scale in war-torn Somalia. The project – which provided beneficiary families with alternative cooking energy in the form of solar cookers and new cooking pots – was implemented between November 2005 and March 2006, and 950 families residing in Bander Beyla town and four surrounding villages – Dhuur, Dhuudo, Eldhidir and Kulule – benefited from the project.<sup>7</sup> The beneficiaries were carefully selected<sup>8</sup> based on their economic vulnerability, female-headed households, loss of assets (such as fishing gear and boats) during the 2004 tsunami, lack of capital, and minority and marginalised group membership. A survey was conducted with these households to collect information on who cooks and buys charcoal, the number of sacks of

charcoal used by each household, and the families' basic awareness of the importance of trees and environment. Members of the beneficiary households were then trained on how to use and maintain their solar cookers, and the heads of families were trained<sup>9</sup> on the benefits of using solar cookers – the health of their families, saving time and being more economically viable.

While it is too early to determine the extent to which the introduction and distribution of solar cookers has minimised violence and conflict over charcoal and firewood, discussions with traditional leaders, women and men in these communities indicate that, prior to the distribution of solar cookers in their locales, conflicts over charcoal and access to firewood occurred between individuals and groups from time to time. The recipients of solar cookers in the four locales hold the view that cases of such conflicts have reduced with the introduction of solar cookers. Halima, a resident of Eldhidir village, said: "Scarcity of firewood leads to fierce competition, which may cause those competing for these commodities to resort to violence. Each group wants to have more access to firewood and may, at times, use arms to scare off other interested groups. In some incidences, where violence has led to serious injury or even death, those affected oftentimes move to avenge on behalf of the victims' families and clans, leading to deadly violence. A traditional leader in Kulule





**A woman in Bander Beyla cooks lunch for her family using a solar cooker.**

village confirmed: “With the solar cookers now available in a number of households in my village, we are seeing less quarrels and conflicts over firewood and charcoal production. The use of solar cookers has reduced the demand for scarce firewood and charcoal in our village, as well as in other places where distribution of solar cookers were made.”<sup>10</sup> A resident in Dhuur village explained how dependency on charcoal impacts on poor families, and said: “Charcoal sellers often quarrel with families that take charcoal on credit over payment. This at times leads to serious conflicts.”<sup>11</sup> Consistent use of solar cookers can ease competition over scarce firewood and lessen conflicts over firewood and charcoal.

By using solar cookers, families have reduced their dependency on charcoal and firewood for their daily cooking, enabling them to afford more nutritious foods. For example, after receiving a solar cooker, average charcoal use decreased by three to four sacks a month in each family. “Through our new solar cooker, my family is able to save money, which

we previously spent on purchasing sacks of charcoal,” one recipient said.<sup>12</sup> Another woman asserted: “My solar cooker has eased my family’s reliance on expensive charcoal.”<sup>13</sup> According to Haweya, a mother of six, she is now able to buy goat milk, meat and other food items for her children. “I have saved thousands of shillings since I started using the solar cooker. Before, I could not purchase those items,” she said.<sup>14</sup>

The introduction and distribution of solar cookers has also increased the participation of men and older boys in household cooking activities. A mother of four boys noted that her husband and sons are keen on cooking since her family received its solar cooker through this project. “Because the solar is clean and easy for them to use, they can now make tea, coffee and light meals for us,” she added.<sup>15</sup> The use of solar cookers can alter socially defined gender roles and may encourage men and boys to participate in cooking – and, as such, free women and girls from spending long hours in food preparation and cooking. Domestic chores that require many hours of work deny women and girls the opportunity



**A Somali woman proudly shows off the small amount of charcoal she now uses, since receiving her solar cooker.**

to obtain an education and participate in decision-making processes, but the use of solar cookers may provide women and girls such space, and the opportunity to be educated and to participate actively in activities in which they previously could not.

With the introduction of solar cookers to the 950 households, charcoal traders were finding it difficult to sell charcoal to their former customers. There were also more sacks of charcoal at the markets: a sign that solar recipients were no longer purchasing as much charcoal. This, of course, infuriated the charcoal traders, who began an aggressive campaign to reclaim their customers. Discussions with recipients of solar cookers indicated that charcoal traders were discouraging them from using solar cookers, and reduced the price of charcoal sacks to attract former consumers. Some charcoal traders went as far as spreading rumours that the glare from solar cookers was harmful to health. However, the project's staff, who visited the solar cooker users frequently, continued to support them and encourage the use of this form of energy.

Families using these cookers have managed to pay off debts and start income-generating activities, thus improving their livelihoods. "With the savings that I made since I started using my solar cooker, I was able to save some money to pay off my debts," testified a mother of four.<sup>16</sup> "The more I used the cooker, the more money I saved, and with the money I have been able to buy clothing and medicine for my children," another woman commented.<sup>17</sup> By switching to a more efficient and modern form of cooking energy, these families were able to keep their hard-earned money for their own benefit rather than paying charcoal traders, who have contributed to the destruction of trees and community conflict over the years. Solar cookers have provided these families with a responsible form of energy that safeguards the well-being of the community, particularly women and girls. The use of solar cookers has also freed women and girls from the difficult and dangerous task of collecting firewood, and

**BY USING SOLAR COOKERS, FAMILIES HAVE REDUCED THEIR DEPENDENCY ON CHARCOAL AND FIREWOOD FOR THEIR DAILY COOKING, ENABLING THEM TO AFFORD MORE NUTRITIOUS FOODS**

introduced them to an environmentally friendly and safer form of energy.

The solar cooker project was not just about the distribution of solar cookers. It also raised the awareness of the recipients and their communities about their impact on the environment. As has been described above, first a survey captured information on families' charcoal consumption and the amount of money spent on charcoal every month. This information, when shared, enlightened the community as to their impact on the environment and the overall amount of resources spent on this unsustainable commodity. Next, the benefits of using solar cookers and the importance of protecting the environment were communicated to beneficiary families. Environmental principles<sup>18</sup> and messages were also created and communicated to members of the community, particularly to women, youth and traditional and religious leaders. The project united members of the community on how to reduce charcoal consumption and protect their environment through the use of solar cookers.

#### **Challenges Faced by Recipients of Solar Cookers**

Despite the benefits of using solar cookers, certain challenges affected the way the recipients adapted to the use of solar cookers for their daily cooking activities. The type of solar cookers distributed required a spacious and cemented area. However, the majority of families had no cemented areas in their homes, and the solar cooker wheels easily sank





SHUKRA DINI

**Many families lacked closed compounds and cemented areas to ensure the security of their solar cookers and to prevent sand damage to the cooker.**

into the sand and could not stand upright well. As a result, the recipients were hesitant to use the cookers and complained that they were too heavy to move around their compounds. Sand eroded the lower metal of the solar cookers, and the project's budget did not allow for the building of cemented spaces for each of the recipients. The majority of households also lacked closed compounds where they could ensure the security of their solar cookers, and they were concerned about theft. Recipients also complained about the glare of the cookers, and some feared losing their eyesight. Ongoing dependence on charcoal was also a hindering factor, and some families – even once they had received solar cookers – struggled to change this destructive and expensive habit.

### **Conclusion**

The use of solar power in Somalia can reverse the problems of desertification caused by charcoal production. It has the potential to free charcoal and firewood-dependent

families to utilise energy that is clean, free and does not affect their health. This project provided 950 families in Bander Beyla and surrounding villages with alternative clean, cheap, environmentally friendly cooking energy, and through their usage eased some of the communal conflicts over scarce firewood and charcoal production. Through this project, households saved money and increased their environmental awareness. The financial savings enabled families to purchase much-needed items they were unable to afford prior to the distribution of the solar cookers. In addition, the introduction of solar cookers has brought positive change to the lives of women and girls, who previously spent six to seven hours a day cooking for their families and being exposed to smoke and soot inhalation. The use of solar cookers has given women and girls more time, which they can use to attend school and be active in their community affairs. Through solar cookers, women and girls have become aware of the negative effects of firewood and charcoal on their health and on their



family's savings – which heightened their understanding of the benefits of using solar cookers.

The introduction and distribution of solar cookers was intended to reverse the long-term environmental degradation caused by the production and use of charcoal for cooking energy. This project was implemented more than five years ago and its findings were relevant to 2006. The long-term impact of this project needs to be explored to establish if the earlier results of the project still remain. Updated research will reveal the percentage of recipients who are still using their solar cookers, the amount of savings each household continues to experience, and the extent to which the continued use of solar cookers still reduces environmental degradation and communal conflict. In order to save more trees and reverse environmental degradation,

**FAMILIES USING THESE COOKERS HAVE MANAGED TO PAY OFF DEBTS AND START INCOME-GENERATING ACTIVITIES, THUS IMPROVING THEIR LIVELIHOODS**

more solar cookers need to be distributed to many regions of Somalia. Charcoal production and consumption in Somalia is not sustainable – if charcoal dependency continues, the few remaining trees and rangelands will be denuded and destroyed, leading to further soil erosion.

Charcoal production and consumption provides livelihoods to many people. Without creating alternative employment opportunities for these people, and without the use of alternative cooking energy – such as solar cookers – the production and consumption of charcoal and firewood will persist in Somalia. Furthermore, all levels of authority in Somalia – from village level to national level – must implement and enact environmental policies that will protect trees and prevent soil erosion (an outcome of charcoal production) and provide alternative livelihoods for those involved in charcoal production. Immediate action must be taken to minimise the ever-growing dependency on charcoal, and the related conflict and violence that occurs in communities. Raising the awareness of everyone involved in charcoal production and consumption – buyers, consumers, sellers and the general public – particularly their understanding of the benefits of protecting their own environment, is also urgently needed in war-torn Somalia. ▲

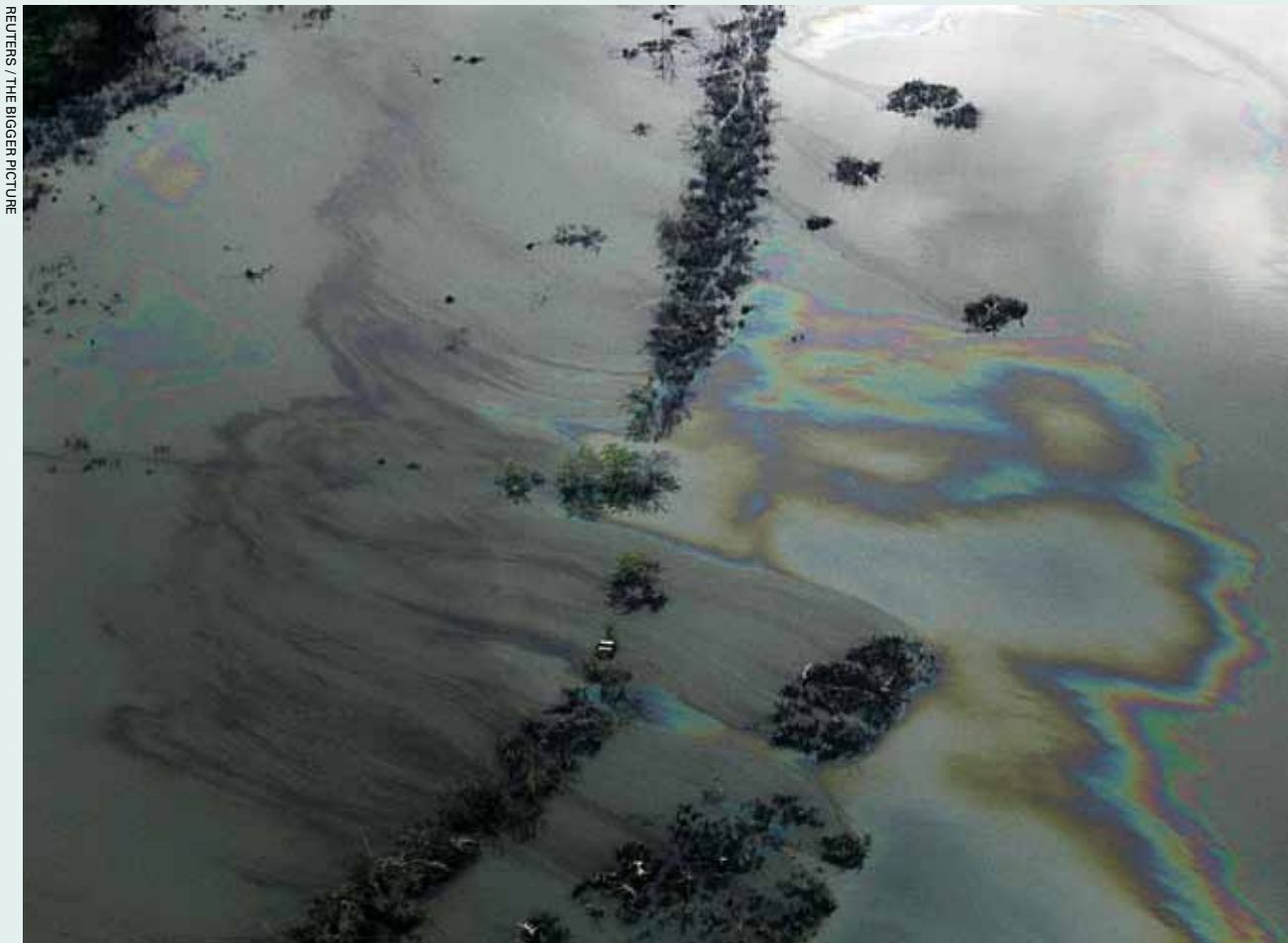
**Dr Shukria Dini was the Project Manager of the Solar Cooker Project and implemented it on behalf of Horn Relief International in the KarKaar region, Puntland, Somalia from November 2005 to March 2006. She is an independent Researcher who lives in Nairobi, Kenya.**

## Endnotes

- 1 Bander Beyla is a coastal town on the Indian Ocean in Somalia's north-eastern region of Puntland. The town was affected by the 2004 tsunami and its inhabitants lost their fishing boats, gear, homes and their overall livelihoods.
- 2 Ali, Hussein (2005) Interview with the author in November. Bander Beyla town. Ali is an elder in Bander Beyla town. Fictitious names have been used to protect the real identity of all individuals quoted in this article.
- 3 Salad, Ali (2005) Interview with the author in November. Bander Beyla town.
- 4 Armed men who reside near the areas where charcoal is produced may refuse outsiders to cut trees in their region. These men argue that they are protecting the environment. They are not environmentalists and they argue that they simply want to protect the trees for their own interests: to make charcoal or use trees as firewood for themselves.
- 5 Jelle, Fatuma (2005) Interview with the author in November. Bander Beyla town.
- 6 Suldaan, Jimco (2005) Interview with the author in November. Bander Beyla town.
- 7 A total of 612 families in Bander Beyla town received solar cookers. Dhuur is 56 km from Bander Beyla, and 55 families in Dhuur benefited from this project. Eldhidir is 38 km from Bander Beyla town, and there were 86 families in Eldhidir that received cookers. Kulule is 70 km from Bander Beyla, and 155 families were selected and received solar cookers.
- 8 The process of selecting beneficiaries was participatory and inclusive. Community members – including local leaders, women and youth – in all five areas were mobilised and invited to choose the most deserving families for the solar cookers. They came up with a guideline for selecting the most deserving families in their respective communities.
- 9 Through such trainings, the head of each family was provided with information on the importance of preparing nutritious meals, how to cook nutritious and affordable meals through channelling resources spent on charcoal to food, and the importance of boiling drinking water.
- 10 Abdulle, Odowa (2005) Interview with the author in November. Kulule village.
- 11 Daud, Hindiya (2005) Interview with the author in November. Dhuur village.
- 12 Abdi, Jamila (2005) Interview with the author in November. Bander Beyla town.
- 13 Abdikarim, Suad (2005) Interview with the author in November. Bander Beyla town.
- 14 Adan, Haweya (2005) Interview with the author in November. Bander Beyla town.
- 15 Farah, Zeinab (2005) Interview with the author in November. Bander Beyla town.
- 16 Isak, Dahabo (2005) Interview with the author in November. Bander Beyla town.
- 17 Ismail, Hawa (2005) Interview with the author in November. Bander Beyla town.
- 18 Environmental principles formed included: human beings can only survive and be secure when they protect, respect and become the custodians of their environment; they need to recognise that, as humans, cutting and burning trees to produce charcoal impacts negatively on the environment; charcoal production has multiple implications for people and animals; and that every person has the responsibility to protect and minimise their negative impact on the environment.

# COLLUSION AND CRIMINALISATION: FUEL CONFLICT IN THE NIGER DELTA

BY MELISSA CAWTHRA



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The economic disparities and social inequalities that have been brought about by the extraction industry in the Niger Delta stand in stark contrast to this region's massive contribution to the world oil economy. The expansion of the activities of oil and gas multinationals in Nigeria, helped by the collusion of government officials, has played a direct role in fuelling corruption and violence and creating a seemingly paradoxical situation, characterised by the simultaneous enrichment of foreign companies and the impoverishment of local populations.

However, one must be cautious to avoid simplistic readings that attribute the ongoing conflict in the oil-rich Niger Delta to a single cause by calling for a nuanced

analysis of the "complex web of petro-violence"<sup>1</sup>, based on the interplay of a variety of domestic and international factors. This article seeks to identify factors that have combined to fuel conflict in the Niger Delta. Beginning with an account of the background to the conflict, it will thereafter provide an overview of recent developments that have served to exacerbate tensions in the Niger Delta region. The article will then examine the shortfalls of measures that have thus far been put in place by

**Above: Frequent oil leaks have wreaked widespread damage on the ecosystem of the Delta states.**



the extraction industry and the state, in response to widespread international condemnation of environmental and human rights violations incurred by corporations and the Nigerian government.

**Background to the Conflict**

The Niger Delta is a region made up of nine states with a combined population of 31 million in the swampy coastlands in the south of Nigeria. The region occupies a prominent strategic position both nationally and internationally as host to Nigeria’s vast oil industry, and accounts for over 75% of the country’s petroleum production and exports. In spite of its considerable contribution to the national economy, the Niger Delta is one of the least developed areas in Nigeria – the majority of local communities do not have access to clean drinking water or electricity. Traditionally, local populations have relied on subsistence activities such as fishing and farming to make a living. However, the livelihoods of these local communities are threatened by the activities of foreign oil and gas corporations such as Shell, Chevron-Texaco, Exxon-Mobil and British Petroleum (BP). Failure to maintain oil facilities adequately, frequent oil leaks and gas flares have wreaked widespread damage on the ecosystem of the



**A satellite image of the Niger Delta.**





**Port Harcourt in the Niger Delta, the oil capital of Africa, is a crowded city plagued by crime where most people live well below the poverty line.**

Delta states, and local communities find themselves in the precarious situation of having their villages bulldozed to make way for further expansion of energy infrastructure – as has been the case several times in the past. Unfortunately, the Nigerian state, reluctant to turn down the substantial economic gains offered by this lucrative industry, has done little – if nothing – to alleviate human suffering and mitigate environmental damage. In fact, it has often been complicit in allowing multinationals to pursue their activities with impunity. Poor regulation and expropriation of land for oil production have led to the chronic underdevelopment of the Delta states, in spite of the region's considerable oil wealth.

The current situation in the Niger Delta stems from decades of neglect of local communities and violent state repression. The combined result of this has been a full insurgency since 2006, in which the Movement for the Emancipation of the Niger Delta (MEND) and various other political and criminal groups have resorted to violent means to protest environmental and human rights abuses and gain access to revenues generated by the oil-rich region. The complexity and scale of the conflict in this region is such that the International Crisis Group published a report in August 2006 in which it described the volatile nature of the situation as a “potent cocktail of poverty, crime and corruption”.<sup>2</sup>

### **The Strategic Importance of Oil in Nigeria**

In Nigeria, oil makes up the fiscal basis of state power, federal power and economic development. The Delta's long history of neglect stems in large part from the state's perceptions of the economic irrelevance of local communities: as a rentier state that derives 80% of its official revenues and 95% of its export earnings from the sale of oil, the government does not rely on taxes from its citizens and, therefore, does not feel bound by any obligation to provide its people with basic public goods like education, improved health facilities and security.<sup>3</sup> William Reno's theory of 'warlord politics' as the modus operandi in many weak African states turns the conventional notion of statehood on its head. For Reno, corrupt leaders, faced with insurgencies and warring factions within their countries, seek self-enrichment and build up their power bases by accumulating rents to fight off threats from local strongmen and pacify insurgencies at the expense of state building and development.<sup>4</sup> Following World Bank and International Monetary Fund (IMF) prescriptions to trim bureaucracies and privatise public-sector companies, these leaders have come to replace Cold War patronage networks with partnerships with unscrupulous foreign firms. As is the case with oil multinationals in Nigeria, these firms fulfil

surrogate state functions by providing bureaucratic services (in this case, security) in areas where valuable resources are extracted.<sup>5</sup> This collusion between state and multinationals is particularly troubling as it fosters an unhealthy interdependence between the two entities, and reduces transparency in business operations and the regulation of industry practices. On this point, Ukeje has noted that “multinational and local oil companies and the Nigerian state are locked in a complex, opaque and very often incestuous relationship in which each party looks to the other to sustain and advance mutual interests”.<sup>6</sup>

The analysis of the ongoing violence in the Niger Delta is framed by tracing the progression and escalation of the conflict along a spectrum of three phases.

### **Marginalisation and the Peaceful Pursuit of Autonomy**

The Niger Delta is home to ethnic minorities whose grievances extend to the pre-independence period. The Deltans’ struggle for autonomy and self-rule dates back to Nigeria’s colonisation in 1914, when the British relegated Delta populations to ethnic minority status relative to numerically superior ethnicities in the north, east and west of the country. The marginalisation of local Delta communities was cemented in 1969, when the federal military government took control of all petrol-producing territories through Decree No. 51/Petroleum Act of 1969. Under this Act, the federal oil minister was granted “the sole right to grant oil mining leases to oil



REUTERS / THE BIGGER PICTURE

**Vast areas of farmland lay scorched after an explosion on a ruptured pipeline in Oviri court in Adedje in the Niger Delta area that claimed the lives of 250 people and destroyed cash crops (2000).**



companies".<sup>7</sup> Revenue allocation to ethnic minority states was progressively reduced from 50% in 1966 to 3% in the mid-1990s, then increased to 13% in 1999<sup>8</sup> following intensified opposition – but local communities have thus far derived no tangible gains from this increase, due to mismanagement and misappropriation of revenues by state governments. The government has controlled the

MULTINATIONAL CORPORATIONS HAVE INFLICTED WIDESPREAD ENVIRONMENTAL AND SOCIAL DAMAGES ON THE NIGER DELTA OVER THE COURSE OF MANY YEARS, AND THE CONFLICT IS LIKELY TO PERSIST AND INTENSIFY AS LONG AS THE GRIEVANCES OF LOCAL COMMUNITIES FAIL TO BE ADEQUATELY ADDRESSED

energy purse strings since it nationalised the oil industry in 1971 and owns between 55% and 60% of onshore multinational oil operations in the name of the Nigerian National Petroleum Corporation, according to the terms of a joint venture arrangement with oil multinationals.<sup>9</sup> This arrangement generated US\$60 billion in revenues for the Nigerian state in 2005.<sup>10</sup> The shift from military to democratic rule in 1999 has done nothing to ameliorate widespread institutionalised corruption by state officials, with the head of Nigeria's anti-corruption agency estimating that 70% of oil revenues were stolen or wasted in 2003.<sup>11</sup>

Furthermore, the Land Use Act – which effectively placed all of Nigeria's land under the control of the state government – was passed in 1979, thereby compounding the disempowerment and economic marginalisation of the Delta communities.<sup>12</sup> This legal provision has facilitated the expropriation of Niger Delta land for oil production and development by oil multinationals. Almost exclusively dependent on oil rents and bound to multinationals by contract, the Nigerian state has thus come to fulfil a gatekeeper role for oil multinationals operating in the Delta.

It was within this context of alienation and exclusion of local Delta populations that Ken Saro-Wiwa, a writer and Ogoni ethnic minority rights activist, led a non-violent campaign by the Movement for the Survival of the Ogoni People (MOSOP) in the 1990s to protest against violations of environmental and human rights in Ogoniland. MOSOP drew up a Bill of Rights in which it targeted abuses by Shell and demanded autonomy and local control of Niger

Delta oil revenues. MOSOP's initial local non-violent protest evolved into a global campaign, by linking up with international advocacy groups which exerted pressure on Shell and the Nigerian government to put an end to human rights abuses, exploitation and widespread pollution in Ogoniland.

### Increased State Repression and Resort to Violent Protest

In spite of the apparent success of the MOSOP campaign in the early 1990s, peaceful protests met with state repression and culminated in the public execution of Saro-Wiwa and other members of the 'Ogoni Nine' in 1995 under Abacha's military regime. The brutal state repression of MOSOP informed the Ijaw ethnic minority movement in Niger Delta, which issued an ultimatum for all oil companies to leave the region by December 1998. The government responded by declaring a state of emergency in the Niger Delta; the protest was crushed and grievances left unaddressed. Many hoped that the transition to civilian rule and democracy in 1999 would bring about greater dialogue between state and citizens, but it has, in fact, led to higher levels of violence as local politicians began to co-opt insurgents, arming Delta



REUTERS / THE BIGGER PICTURE

**Political and militant groups in the Niger Delta have resorted to violent means to protest environmental and human rights abuses and gain access to revenues generated by the oil-rich region.**





**Ijaw militants guard the Oporoza creeks in Gbaramatu kingdom, in the volatile Niger Delta region.**

resistance groups in exchange for political support. Nor has the end of the Abacha dictatorship in 1999 had much effect on curbing the excesses of the military, who receive generous company allowances for providing security at oil plants and silencing protestors.

Attempts by disenfranchised local communities to voice their grievances and assert their rights have thus been quashed consistently. In this light, it is not surprising that, after decades of peaceful campaigning, the oppressed peoples of the Delta came to view violence as a legitimate weapon of protest. The increased resort to violence must also be seen in the context of an entrenched culture of violence and militarism in Nigeria that is an extension of the colonial state, as well as the product of decades of post-colonial military rule.<sup>13</sup> This culture of violence is so ingrained in Nigerian society that it has come to dominate relations between state and local communities, insurgents and corporations and, more recently, intracommunal relations. The combination of the state's pacification techniques, intensified military deployment in insurgency zones by state and corporations, and the widespread belief amongst Delta youth that acquiring weapons will earn them respect and lend legitimacy to their cause has resulted in a proliferation of small and light weapons in this region. These conditions led to a full insurgency in 2006, with resistance movements such as MEND

frequently carrying out attacks on oil infrastructure in their struggle to control oil revenues in the Delta and force the eviction of oil multinationals from the region – particularly in light of the widespread environmental degradation that their operations have caused. The MEND insurgency was initially framed in political terms, with the movement claiming to disrupt operations with the intention of crippling the Nigerian state and oil industries' capacity to produce oil in the Niger Delta. Since this time, however, the conflict has evolved and become increasingly complex as a multiplication of criminal elements and gangs have followed suit, conducting acts of sabotage and oil bunkering purely for economic gains, with the consequence that there has been a blurring of the lines between criminal and militant groups.

### **Post 9/11 Developments**

The prevailing volatility of this region must be seen in the context of its increasing strategic importance as a global energy supplier. Due to heightened instability in the Middle East and a decrease in the United States' (US) popularity in that region in the aftermath of 9/11 and the Iraq War, the US and its 'coalition' counterparts have tended to favour oil exploration and investment in Africa in the past decade (which implies stepping up security to protect the region's abundant oil reserves and combat the rise of terrorism).



**Nigerian soldiers aboard a patrol boat keep watch over a natural gas loading terminal in Bonny, in the oil rich Niger Delta.**

The past decade has seen a growing tendency of Western governments to help Nigerian and other Gulf of Guinea states build their military and naval capabilities, strengthen their security sectors through arms sales and reinforce their regional military presence for the purposes of deterrence.<sup>14</sup> The increasing visibility of the US Navy in the Gulf of Guinea, the establishment of AFRICOM (the US African Command) and the United Kingdom (UK) navy's promise of military aid to Nigeria in 2008 are proof of direct contributions to the militarisation of Nigeria by Western nations.<sup>15</sup>

Another recent geopolitical development is the Gulf of Guinea's rising importance as a hub for drug smuggling and related forms of transnational criminal activity. The UNODC World Drug Report, published in 2010, indicates that, whereas cocaine consumption has dropped 50% in the US in the past 10 years, it has increased in Europe.<sup>16</sup> This shift in geographic patterns of demand for cocaine accounts for a diversion of drug trafficking routes in the past decade, as drugs are increasingly smuggled via the West African Gulf of Guinea in transit from South America to Europe, whereas 10 years ago they commonly transited from South America to the US via Central America. In light of these new developments over the past decade, Western powers – notably the US – have responded by stepping up

the militarisation and 'securitisation' of the region in an effort to police crime and arm the Nigerian government against attacks by insurgents. The motivation behind this is quite simple: these powers realise that the Niger Delta is vital in ensuring their oil supply, and they are only too aware of the disastrous impact that instability and insurgent activity (such as acts of pipeline sabotage incurred by the MEND rebel movement) can have on global oil prices. These 'securitisation' policies, advanced in the interests of 'energy security' but essentially designed to protect the West's economic interests, have ultimately fuelled the conflict in the Niger Delta, leading to over-militarisation and a proliferation of small arms. These are used to sustain the conflict, thereby protracting the fighting and intensifying the unrelenting struggle between various armed factions, corrupt Nigerian state officials and multinational corporations for the control of resources.

Attempts at 'securitisation' in the oil-rich Niger Delta have, therefore, had precisely the opposite effect: by arming the security apparatus of the Nigerian state, developed nations are directly legitimising increased resorting to state repression of insurgencies. In so doing, they are fuelling the internal conflict between the government and the insurgents, aggravating the resentment felt by the insurgents against



those in power in Nigeria, and hardening their resistance to the presence of foreign multinationals. This serves to perpetuate the cycle of violence in the region.

### **Industry Responses: Limited Corporate Social Responsibility and Criminalisation**

Multinational corporations have inflicted widespread environmental and social damages on the Niger Delta over the course of many years, and the conflict is likely to persist and intensify as long as the grievances of local communities fail to be adequately addressed. Environmental degradation has had disastrous consequences for the livelihoods of the Delta people and requires urgent attention. The government's policy of evicting local populations to make way for further expansion of oil operations has deprived subsistence-based communities of the ability to fish or farm. Today, the majority of local people from former fishing communities are forced

operating in the Niger Delta signed the Voluntary Principles on Security and Human Rights with the governments of the US and the UK and prominent international non-governmental organisations (NGOs) which, "with an interest in human rights and corporate social responsibility ... engaged in a dialogue of security and human rights".<sup>20</sup> However, the signing of this agreement has done little to reduce the conflict in the Niger Delta, and a gap remains between design and implementation of the principles.

Some argue that CSR policies adopted several years ago have been insufficiently implemented and have failed to reduce violence, as multinationals' agendas are essentially skewed in favour of enabling continued business operations without addressing the key issues linked to local community development in a meaningful way.<sup>21</sup> When questioned, industry has tended to put the blame on the Nigerian state's monopoly of sovereignty, and claimed reluctance

IN NIGERIA, OIL MAKES UP THE FISCAL BASIS OF STATE POWER, FEDERAL POWER AND ECONOMIC DEVELOPMENT. THE DELTA'S LONG HISTORY OF NEGLECT STEMS IN LARGE PART FROM THE STATE'S PERCEPTIONS OF THE ECONOMIC IRRELEVANCE OF LOCAL COMMUNITIES, THE GOVERNMENT DOES NOT RELY ON TAXES FROM ITS CITIZENS AND, THEREFORE, DOES NOT FEEL BOUND BY ANY OBLIGATION TO PROVIDE ITS PEOPLE WITH BASIC PUBLIC GOODS LIKE EDUCATION, IMPROVED HEALTH FACILITIES AND SECURITY

to depend on frozen fish, which is sold for close to US\$1 a piece and, therefore, generally unaffordable to Delta locals – most of whom live on less than US\$1 a day.<sup>17</sup> Hundreds of gas flares have burned continuously for decades, causing acid rain and releasing greenhouse gases; leaks from wells and pipelines and the construction of roads and canals have disrupted fragile wetland ecosystems; and frequent oil spills destroy cropland and pollute groundwater. The extent of the environmental damage is staggering: roughly 5 400 oil spills were officially recorded between 2000 and 2004,<sup>18</sup> but analysts suspect that the real figure is much higher. Corporate social responsibility (CSR) measures that take into account the far-reaching consequences of such profound damage on the lives of local communities are long overdue.

Greater progress seems to have been made in terms of addressing social and human rights abuses, but the measures adopted thus far are by no means sufficient in resolving the conflict. Following widespread condemnation of Shell's alleged complicity in the 'Ogoni Nine' executions in 1995 by advocacy and human rights groups, the company responded by withdrawing operations from Ogoniland. Chevron also came under attack in 1998 for recruiting and supplying Nigerian military forces in the shooting and killing of protesters in May 1998.<sup>19</sup> Then, in 2000, oil multinationals

to undermine Nigerian authority. In this light, one may ask whether these corporations are genuinely committed to community development or whether CSR policies serve as a smokescreen to pursue profits.

The primary strategy employed by multinationals in the Niger Delta has been to criminalise the actions of local communities. Framing acts of sabotage by militants in the Niger Delta as criminal acts is a means of downplaying the political and social-economic grievances of insurgents and depriving their cause of legitimacy, thereby evading responsibility for addressing the root causes of conflict. Criminalisation has largely been achieved by two mechanisms of industrial intervention: the Legaloil.com initiative and the signature of a Global Memorandum of Understanding (GMoU) in 2004 between local Delta communities, the Nigerian government and multinational oil corporations.<sup>22</sup> The Legaloil.com initiative has criminalised resistance groups in two ways: first, the website links bunkering to the trade in conflict diamonds, thereby framing bunkering activities as illicit and formal extraction by oil multinationals as licit; and second, this campaign cites oil bunkering as the culprit and the cause of socio-economic breakdown in the Niger Delta – while such activities have, in fact, arisen as a consequence of, and reaction to,



extraction by oil companies.<sup>23</sup> On the other hand, the GMoU fosters collective punishment in the case of any disruption to industry operations, and forbids collective action by “making non-violent protest effectively criminal”.<sup>24</sup> A recent report published by Amnesty International has exposed this

FAILURE TO MAINTAIN OIL FACILITIES ADEQUATELY, FREQUENT OIL LEAKS AND GAS FLARES HAVE WREAKED WIDESPREAD DAMAGE ON THE ECOSYSTEM OF THE DELTA STATES, AND LOCAL COMMUNITIES FIND THEMSELVES IN THE PRECARIOUS SITUATION OF HAVING THEIR VILLAGES BULLDOZED TO MAKE WAY FOR FURTHER EXPANSION OF ENERGY INFRASTRUCTURE – AS HAS BEEN THE CASE SEVERAL TIMES IN THE PAST

criminalisation by multinationals, citing Shell’s falsification of figures in an attempt to blame the majority of oil pollution on saboteurs (as opposed to industrial oil spills). Two leading advocacy groups – Amnesty International and Friends of the Earth International – filed a complaint in January 2011 in which they claim that Shell’s actions constitute a breach of the Organisation of Economic Co-operation and Development’s Guidelines for Multinational Enterprises.<sup>25</sup>

### Conclusion

While this strategy of criminalising insurgents and implementing limited CSR measures may be a useful way for corporations to avoid blame, abdicate social responsibility and continue to pursue their business operations in the Delta, it points to a much wider problem in terms of transparency and accountability. The Nigerian state’s response to criminalisation has thus far been to increase militarisation, which feeds back into the vicious circle of self-perpetuating violence. Unless these issues are addressed, the chronic lack of state oversight and insufficient CSR implementation on the part of multinational corporations will continue to stoke the flames of resistance and resentment in this already over-militarised and highly volatile zone. ▲

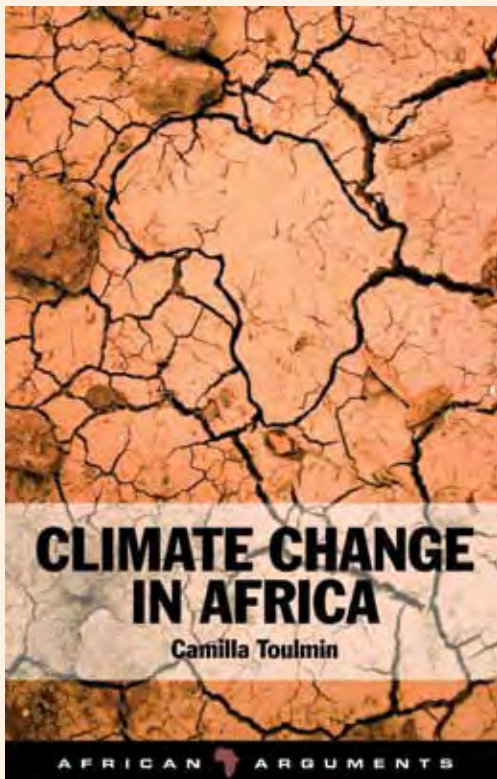
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## BOOK REVIEW

REVIEWED BY **MAXWELL G. HARDY**



# CLIMATE CHANGE IN AFRICA

Author	<b>Camilla Toulmin</b>
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For centuries, the world has become dependent on energy production and consumption to propel its economic growth. Starting with the Dutch peat industry, and evolving from British coal to American oil, fossil fuels have driven states to world dominance and commercial expansion. It is “through new energy sources, new tools, and new market connections” that the world has “acquired greater and greater leverage over the environment”, the effects of which were almost entirely ignored.<sup>1</sup> Yet many of the benefits realised by this process of industrialisation came at the expense of the African continent – a process that began a trend of ostracising local people from discussions on resource distribution.

It is this relationship between the global north and Africa that Camilla Toulmin builds upon in *Climate Change in Africa*. She argues early on that those who benefit from access to certain resources are typically those who have the least to say about their management in Africa. Toulmin’s book focuses on key environmental factors that play a role in shaping the continent as the global climate changes. Her chapters examine food, water, forests, cities, conflict, climate trends and carbon economies to highlight how those who will be most prone to the effects of global climate change will ultimately have the least to say about their management. She offers a comprehensive look at each dilemma, and suggests tangible ways to improve the situation. The author recognises the hype about “global warming”, but sets herself apart by establishing an unambiguous

framework to help readers understand what is going on and how problems might be addressed. As the director of the International Institute for Environment and Development in London, United Kingdom, she has a diverse background in economics and its relationship to the environment. Much of *Climate Change in Africa* looks at broader trends, using case studies and other examples to highlight the urgency of these problems and the possibilities for their improvement.

Toulmin’s organisation of the book helps lay out a foundation for her analysis. She positions the case studies she presents with an overview of climate change in the first and second chapters, providing a context for Africa’s environmental standing. She emphasises that small changes in temperature can have vast effects across the continent. Increased aridity, sea level rise, limitations on fresh water and deforestation are only some factors that will affect the continent in the near future. Much of the rest of the book is dedicated to looking at specific resources and areas where they may become strained. For example, she examines the importance of planning for water shortages at a regional level and discusses how agricultural sciences have done little to benefit Africa. In the chapter about forests, Toulmin discusses how deforestation has reduced the ability for the earth to absorb carbon and to regulate moisture in local ecosystems. Her analyses are detailed, yet not overwhelming. She has clearly made an effort to package the effects of climate concisely, but provides significant data and evidence to argue her thesis well. Complementing her

evidence in the chapters are sections with examples that contribute to her argument. As an example, part of the chapter about cities discusses Gaborone – the capital of Botswana – where there is a 47% poverty rate, poor sanitation and low water supply. These facts help solidify Toulmin’s overall argument about the vulnerability of cities to climate change.

Another important chapter outlines the trends between conflict and environmental scarcity – or the lack thereof. Toulmin weighs in on a debate that was started largely with Thomas Homer-Dixon’s work beginning in the early 1990s. He argued that environmental push factors contributed directly to “acute conflict”, including “scarcity disputes between countries, clashes between ethnic groups, and civil strife and insurgency.”<sup>2</sup> Toulmin asserts that the links that Homer-Dixon and others drew between environment and conflict are largely exaggerated and that their path of causality is frequently flawed. “This apparent causal link is not so clear in practice,” she argues, and points out examples where violence did not evolve in times of resource scarcity (p. 216). She is careful not to debunk the idea completely that the environment can eventually contribute to tension though, and outlines several flashpoints where violence could occur in the future, if coupled with poor governance.

Toulmin’s central argument is persuasive throughout. She is deliberate in outlining what areas are prone to transformation as the global climate changes, and provides specific steps that nations can take to address these problems. *Climate Change in Africa* discusses many programmes and international agreements that are constructive or have shortcomings. As a woman with a background in economics, she is interested in exploring different ways to price ecological goods and services. In her chapter about forests, for example, she discusses proposals for a Reduced Emissions from Deforestation and Degradation (REDD) scheme. The system is based on the value of carbon in existing trees, assuming that trees are worth more alive and standing than dead and as our furniture. But, as she points out, assigning value to different parts of an ecosystem is largely dependent on the stakeholders involved. The reason Ethiopian coffee is so profitable is because it is assigned a price by the global market, to use one example. Items like living forests or flowing rivers seem to hold less value because these factors hold no monetary value to many. As an economist, Toulmin can write about international agreements or new pricing schemes, but many of the problems Africa faces are far more local than these approaches would let us believe – a fact she herself points out. *Climate Change in Africa* looks at regional issues, but frequently seems to suggest top-down approaches as solutions. At one point, Toulmin adds the “informal economy” to a list of problems in Gaborone, Botswana. Yet the so-called informal sector in many ways promotes upward mobility itself, of which Durban, South Africa – a city she highlights as the only of its kind to have a specific plan to battle global climate change – is a great example. The book does a great job of examining solutions using the formal economy and international agreements, but perhaps in a revision of the book Toulmin might add more case studies that look at bottom-up solutions as well.

Climate Change in Africa is an excellent overall guide to climate change on the continent, and appropriately argues that many of the countries most prone to radical changes in their environments often have the least ability to speak about it. This book is a useful tool for anyone starting research on environmentally motivated issues in Africa, and in many places focuses even more deeply and more eloquently than other bodies of literature on the same topic. The combination of a significant reliance on case studies and expertise makes Toulmin’s book essential for understanding global climate change, and for advocating the importance of including countries most likely to feel its effects into the global conversation. ▲

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