Climate-Related Conflicts in West Africa

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Recurrent droughts, in conjunction with other social and economic factors, have led to conflicts among the rural people of the West African Sahel. These conflicts are a constant threat to the livelihoods of those who depend on the the Sahel's unique ecosystem for survival. To develop an effective system for managing these conflicts, we must first identify the economic, environmental, social, and cultural threats experienced by vulnerable groups. Second, we need to understand how vulnerable households and communities have traditionally managed such conflicts, and use this information to develop effective conflict resolution strategies. This article examines climate-related conflict generation and management in the Sudano-Sahelian region of northern Nigeria, within its social context. Placing potential and actual conflicts in the West African Sahel in their social contexts will help in developing and mainstreaming sustainable conflict management strategies into national development policies.

Using a combination of questionnaires, stakeholder analyses, and focus group discussions, I collected data from 800 households in 27 communities in northern Nigeria. The results show that natural resource-related conflicts are the predominant types of conflict in the region. Current climate variability affects the distribution and availability of these resources. Predicted climactic changes driven by global climate change will also affect this variability in the future, changing patterns of distribution and availability, and potentially further exacerbating conflict. The results of this research should inform policymakers in the design and implementation of conflict resolution strategies within the framework of sustainable development.

Drought, Climate, and Conflict in the West African Sahel

In the West African Sahel—a transition zone between the Sahara desert to the north and the savanna regions to the south—recurring droughts exacerbate vulnerability and conflicts. Average rainfall in the region decreases steeply from south to north, ranging from 1,000 mm/year in the south to 150 mm/year in the northern fringes. The short single wet season lasts for about 3-4 months. Over the last century, droughts have significantly increased in magnitude and intensity, and annual rainfall levels have decreased while inter-annual and spatial variability has increased, resulting in a 200 km southward shift in isohyets, or average annual rainfall bands (Adger & Brooks, 2003; Lebel et al., 1997; L'Hôte et al., 2002). The decreasing rainfall has also pushed northern pastoralists to migrate southward into lands occupied by sedentary farmers, causing conflicts and the widespread destruction of

farmlands and cattle, with adverse implications for the region's food and human security.

Predictions of climate change in the Sahel vary widely: while some models project a significant drying (Hulme et al., 2001; Jenkins et al., 2005), others foresee a wetter future, with vegetation expanding into the Sahara (Haarsma et al., 2005; Kamga et al., 2005; Hoerling et al., 2006). However, the progressive wetting of the Sahel does not necessarily mean agricultural productivity will increase, given the region's poor soils. Whatever the predictions, there is enough reason to believe that the climatic conditions for agriculture in the region could deteriorate, resulting in food scarcity and increasing vulnerability.

Vulnerability in the West African Sahel is not only caused by climate variability or change. Social, economic, and political factors interact with climate to cause vulnerability. The region is characterized by high population growth (about 3.1 percent) and rapid urbanization (estimated at about 7 percent) (Cour, 2001). The rate of food production can barely keep up: Intensifying and expanding agriculture has only marginally increased food production. The fallow system that was traditionally used to preserve soil fertility has almost disappeared; farmers in some areas now cultivate their land year-round, and with low fertilization, the soil quickly loses its productivity and yields decline.

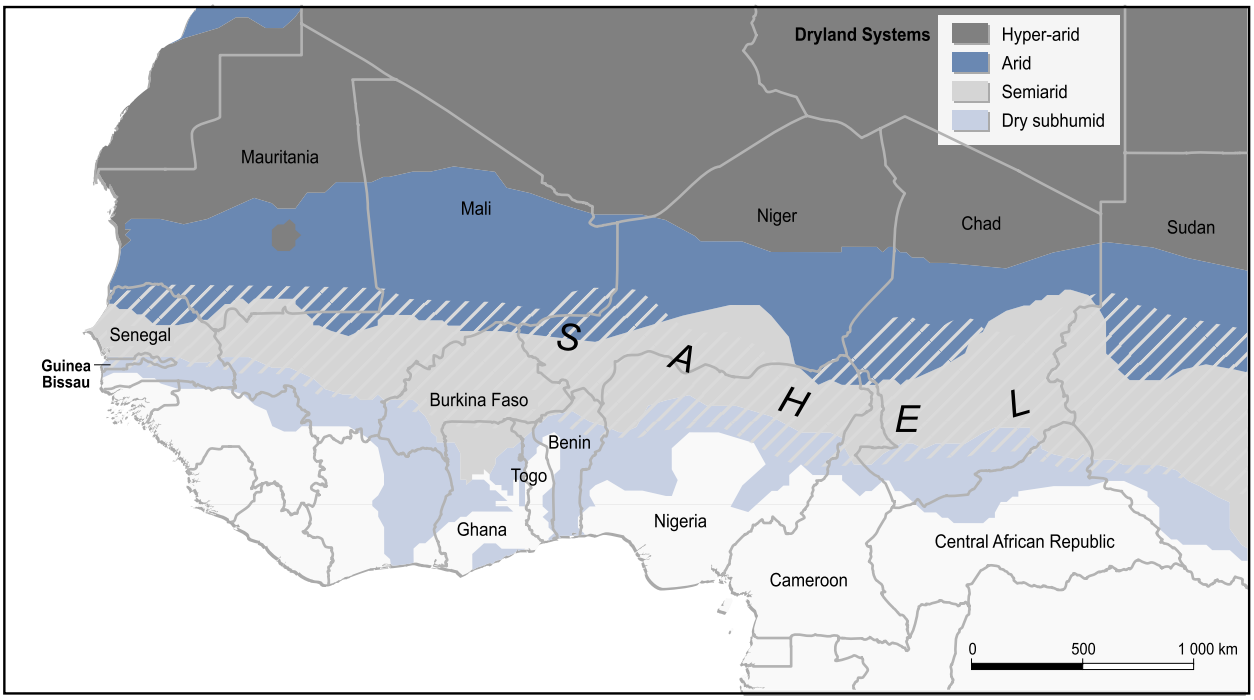
Only 8 percent of the land area in the West African Sahel is suitable for farming, and irrigated agriculture currently occupies about 5 percent of this land (Siebert et al., 2005; Lotsch, 2006). To meet the growing need for food and given the limited availability of cultivatable land, farmers are expanding into marginal lands traditionally used by pastoralists, heightening competition between livestock and agricultural production. Increased population pressure and the concomitant loss of corridors between wet and dry season grazing areas increasingly hamper livestock movement, further exacerbating conflict between and within groups.

In addition to marking a transition from pastoral to farming livelihood systems, the Sahel is also a zone of cultural transition, where the Islamic culture from the north mingles with the traditional cultures of the south. The region's large number of ethnic groups—as well as in-migration of several new ones—creates potential for conflict, as these groups have different interests in the resource base, possess different skills, and claim rights over different resources and areas. Reconciling these divergent interests is essential to achieving sustainable resource use.

Semi-arid dry land in Sahelian northern Nigeria (© Anthony Nyong)

Local communities in the Sahel have developed systems to manage conflicts—including climate-related conflicts—that have been effective in the past (Moore, 2005; Appiah-Opoku & Hyma, 1999). The apparent failure of these institutions to prevent the escalation of recent conflicts—such as those that have occurred in northern Nigeria (Williams et al., 1999); among the Turkana and the Maasai of Kenya (Lind & Eriksen, 2005); and among the Borona and Degodia in Ethiopia (Dejene & Abdurahman, 2002)—can be attributed to the juxtaposition of "modern" or "Western" tenure regimes with traditional regimes (Fiki & Lee, 2004). Besides rendering traditional conflict management strategies ineffective, these newer institutions may impose additional constraints on the users that reduce alternatives, flexibility, and sustainability, and exacerbate the continu-

The West African Sahel



Note: The Cape Verde Islands, although not included in the map, are also defined as Sahel. Prepared by Philippe Rekacewicz and Emmanuelle Bournay of UNEP/Grid-Arendal.
Source: Millennium Ecosystem Assessment (2005).

ing loss of indigenous belief systems and practices (Moore, 2005).

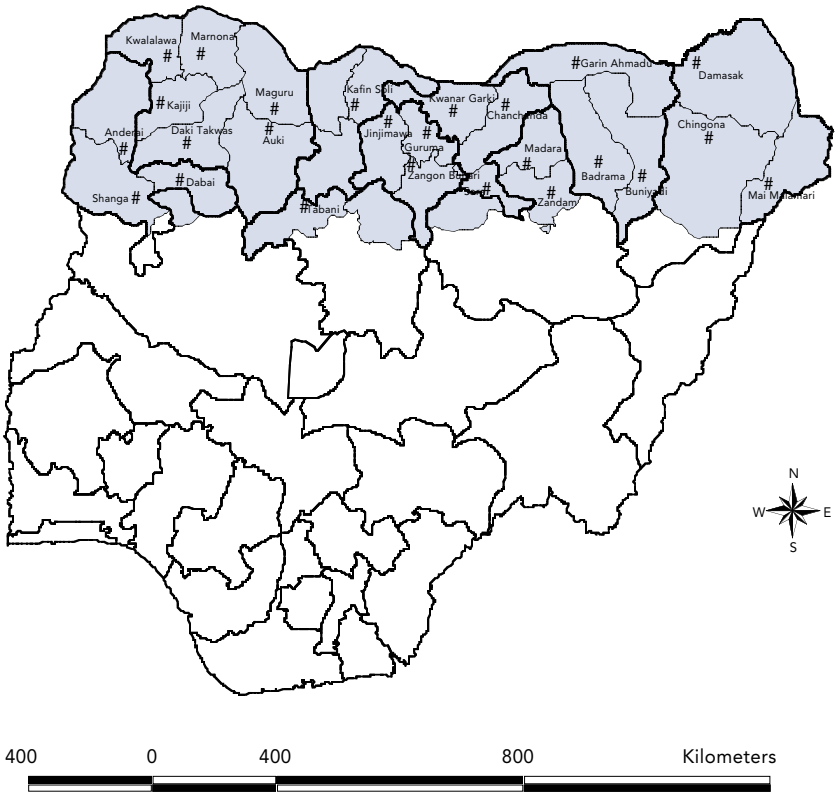
Although indigenous institutions have suffered and continue to suffer some erosion, this decline does not necessarily render them outdated. Thus, far from being anachronisms in today's world, indigenous institutions have much to offer contemporary policymakers searching for a bottom-up approach to conflict resolution and management. Building on the indigenous knowledge systems of the region could offer great prospects for effective and sustainable conflict resolution strategies. Therefore, any meaningful attempt at developing and implementing sustainable climate-related conflict management strategies should start by examining how the communities in the region have successfully managed previous conflicts arising from droughts.

Perceptions of Vulnerability in Northern Nigeria

Considering the sheer size of Nigeria's population (about 50 percent of the population of West Africa), addressing the problem of drought and conflict in this country could contribute greatly to solving similar problems across the region. Like the broader West African Sahel, the Sahelian and Sudano-Sahelian zones of northern Nigeria have suffered environmental degradation caused by successive years of poor rainfall and recurrent droughts, exacerbated by the combined effects of natural population growth and in-migration. With the growing population, more land is being cultivated and less is available for pasture and traditional land use systems that rely on mobility. As average rainfall decreases, pastoralists have migrated south into land occupied by sedentary farmers.

As part of a larger project to assess the vulnerability of poor rural households to droughts in the West African Sahel, about 800 questionnaires were administered to household heads in 27 communities in the Sudano-Sahelian zone of northern Nigeria between April 2003 and March 2004 (see Figure 1).[1] The questionnaire

Figure 1: Study Communities in Northern Nigeria



was supplemented by focus group discussions and stakeholder analyses. The survey found that respondents were most concerned about the risk of insufficient food, followed by shortage of water for domestic use (see results in Table 1). All the respondents' concerns are related to drought, indicating that it is a major problem in the study area.

Causes of Conflicts

The study identified four major causes/types of conflicts: conflicts over access to natural resources, political conflicts, religious conflicts, and domestic conflicts (see Figure 2). These conflicts span the individual/household, community, and regional scales. In the study area, the major cause of conflict (54 percent) was access to and competition for natural resources, resulting largely from the competition for land and water between livelihood groups, principally pastoralists and sedentary farmers. Only eight cases of domestic conflicts were reported (most domestic conflicts are considered "normal" if they do not disturb the community network and collective security and thus go unreported). Religious conflicts largely occurred between Christians and Muslims and sometimes had ethnic overtones.

Both sedentary farmers and pastoralists presented a conflicting perspective of their rights and entitlements to resources. For instance, while both pastoralists and sedentary farmers believe that water is a gift from God, the farmers believe that since they paid for the construction of the wells to serve domestic and irrigation needs, the pastoralists should not use the wells to water their cattle. The sedentary farmers also believe that the pastoralists deliberately bring cows to feed on their crops instead of grass. However, the pastoralists accuse the farmers of deliberately cultivating crops on the cattle paths in order to seek compensation from the

Table 1: Reasons for Vulnerability (ranked)

No	Perceived Risk	Percentage (%)
1	Insufficient food for people	58.2
2	Shortage of water for domestic use	50.9
3	Shortage of water for animals	50.3
4	Shortage of crops for cultivation	48.4
5	Animal diseases	42.5
6	Insufficient pasture for animals	36.6
7	Limited land for cultivation	34.6
8	Crop failure	26.8
9	Conflicts/insecurity	22.2
10	Human diseases	20.9
11	Low prices for animals	13.7
12	Lack of employment	12.4

Note: Households listed more than one risk.

Recurring droughts in northern Nigeria have become more intense and more destructive. The southward movement of average rainfall bands means that the line separating land that traditionally served the pastoralists and the sedentary farmers is no longer clear.

pastoralists and increase their income, particularly during droughts. The perceptual difference of both groups appears to amplify the conflict situation.

Conflicts Over Natural Resources

Using Lewis Coser's (1956, p. 8) definition of conflict—"a struggle over values and claims to scarce status, power, and resources in which the aims of the opponents are to neutralize, injure, or eliminate their rivals"—the study identified five different groups of conflicts that arise over the struggle for natural resources in northern Nigeria, as defined by the actors involved:

- Family/household conflicts;
- Inter-group conflicts between different livelihood and ethnic groups;
- Intra-group conflicts between different socio-economic groups within an ethnic group;
- Conflicts between the state and people; and
- Inter-regional and international conflicts (e.g., with neighboring countries like Chad, Niger, and Cameroon).

About 200 households, representing 24.5 percent of the respondents, reported experiencing conflicts, and about 10 percent had experienced more than one conflict. About 60 percent of the reported conflicts occurred in the dry season. More of the violent conflicts occurred in resource-rich areas like the fertile flood plains, river valleys, and oases that dot the study area than in drier areas. These conflicts largely involved the distribution of ownership rights between neighboring communities.

Losses From Conflicts

The conflicts have resulted in several losses: 22 households reported losing standing crops, and 41 reportedly lost livestock. Eight households lost members to violence. Since many farming households now keep livestock and many pastoralists are settling down, a particular household could potentially lose both crops and livestock, thus complicating the data analysis.

These losses are not only economic. The decimation of herds by drought has frightening implications for the pastoralists, as they rely primarily on their livestock for protein supply, money, and social security. To lose livestock, therefore, is to lose everything. Such animal losses constitute a disaster for many households and livelihood systems.

During the focus group discussions, the sedentary farmers—though losing less in monetary terms than the pastoralists—reported a higher level of perceived losses, indicating a

deeper subjective vulnerability. The sedentary farmers believed that the pastoralists were much richer and their relative losses were lower. These livelihood groups have differential vulnerabilities to the effects of resource scarcity; pastoralists are flexible and can migrate to cope with drought, while farmers are less resilient because they cannot uproot their crops and move them to more favorable locations.

Conflict Resolution: Case Study of the Hadejia-Nguru Wetlands

How are these conflicts managed and resolved? Williams, et al. (1999) present a case study of conflict resolution among pastoralists and sedentary farmers in the Hadejia-Nguru Wetlands in northeastern Nigeria, a seasonally flooded riverine plain of the Komadougou-Yobe River basin. Home to about a million people, the wetlands are of great economic importance to the region and many communities depend on them for their livelihoods. A less-productive arid area next to the wetlands, covered by sandy soils and stunted shrubs, is home to pastoralists. The loss of thousands of hectares of arable land to desertification in the region's northern fringes has led land cultivators and pastoralists to move to the wetlands to access the water. Large quantities of rice, vegetables, and wheat are produced annually in the wetlands. It also supports a large number of livestock, ranging from about 200,000 cattle in the wet season to about 500,000 cattle in the dry season, as well as about 1.5 million other animals such as camels, goats, and sheep. Most of the pastoralists do not have rights to the land and depend mostly on open rangelands, crop residues, and browsing to feed their animals. Wherever the pastoralists are allowed to settle, as they are increasingly doing, they are not given rights to the land, and as pressures on land increase, conflicts often break out between these pastoralists and their landlords over access to land and water resources (Williams et al., 1999).

The introduction of all-year farming in the wetlands hampers the pastoralists' access to crop residues, as the farmers burn down the fields immediately to prepare for dry-season farming. The addition of farms around water bodies has left insufficient passage for livestock to reach drinking points, escalating conflicts. In addition, farmers have encroached on most of the traditional cattle routes, largely due to government efforts to encourage commercialized agriculture and promote crop production.

Hadejia-Nguru Wetlands in northeastern Nigeria (© Anthony Nyong)

Over the years, the government has used the police and the courts to try to resolve the conflicts. The police have been accused of extorting money from the parties, especially the pastoralists. The pastoralists complain that since they had no land title or land rights, the courts favor the farmers in crop-damage cases. The use of police and courts to settle these disputes has supported the adversarial relationship between the farmers and the pastoralists, and deepened the conflicts.

In some cases, these conflicts have been resolved using existing traditional institutions that seek to ensure sustainability in both the social and ecological systems. Unfortunately, the effectiveness of these traditional institutions is waning. For instance, the pastoralists have grown to distrust the traditional rulers, who are mainly farmers. In addition, the pastoralists' traditional rulers do not have the same powers, and are not treated as equal partners in the adjudication of cases.

The use of police and courts to settle these disputes has supported the adversarial relationship between the farmers and the pastoralists, and deepened the conflicts.

The Hadejia-Nguru Wetlands Conservation Project of IUCN-World Conservation Union was established in 1987 to seek the sustainable development of the wetlands to benefit current and future generations and conserve wildlife within the wetlands and the surrounding drylands.[2] The region's frequent conflicts have hampered the achievement of this objective. To reach a more amicable solution, the management of the project attempted to set up a system that combined bargaining and negotiations, with strong involvement of both governmental and traditional institutions, as well as concerned stakeholders. They organized a series of workshops that led to the formation of a strong consultative forum to identify early signals of potential conflicts and seek amicable ways of avoiding them. The forum also sought to work with concerned parties to resolve existing conflicts and mainstream these strategies into national and regional development policies.

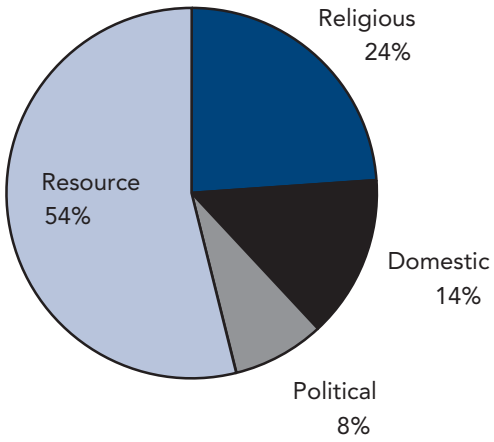
With the help of the relevant government agencies, NGOs, and traditional institutions, the forum succeeded in effectively establishing passage for pastoralists to watering points, greatly reducing the conflicts. The forum also encouraged the government of Nigeria to pass a decree that harmonized the country's national and sub-national water policies, thus improving the management of water resources for multiple users in the affected regions, which greatly reduced the frequency and magnitude of conflicts in the region.

Realizing that a major source of this conflict was the lack of access to fodder for livestock, the Hadejia-Nguru Wetland Conservation Project promoted the cultivation of fodder by the farmers to sell to the pastoralists at a subsidized rate. That way, the pastoralists did not have to graze their animals in the cultivated zones. Finally, the police were only called in for serious incidents.

Conclusion

Recurring droughts in northern Nigeria have become more intense and more destructive. The southward movement of average rainfall

Figure 2: Causes of Conflicts



bands means that the line separating land that traditionally served the pastoralists and the sedentary farmers is no longer clear. As these groups compete for the scarce ecosystem resources they share, conflicts have increased.

Over the years, traditional institutions have successfully managed drought-related conflicts in the region. The failure of these institutions to manage recent conflicts can be attributed to the rapid and continuing loss of indigenous belief systems and practices through the imposition of Western culture and norms. Reinvigorating these indigenous institutions could provide contemporary policymakers with effective bottom-up approaches to conflict resolution and management.

To successfully manage drought-related conflicts arising from resource use in the Sahel, strategies adapted from traditional conflict resolution practices must be mainstreamed into national and regional development policies. To do this, we must understand vulnerability to climate change from the perspectives of the vulnerable populations. The general strategy for coping with climate change should include both conflict resolution strategies and capacity-building programs for those most likely to suffer its consequences.

Notes

1. The study was part of the Assessments of Impacts and Adaptations to Climate in Multiple

Regions (AIACC), a global initiative developed in collaboration with the Intergovernmental Panel on Climate Change and funded by the Global Environment Facility (GEF) to advance scientific understanding of climate change vulnerabilities and adaptation options in developing countries (see www.aiaccproject.org). Funding for AIACC was provided by GEF, USAID, the Canadian International Development Agency, and the U.S. Environmental Protection Agency. I also wish to acknowledge the support of the various stakeholders, community leaders, chiefs, and respondents who gave their time to be a part of this research.

2. For more information, see http://www.iucn.org/themes/wetlands/hadnguru.html

References

Adger, W. Neil, & Nick Brooks. (2003). "Does global environmental change cause vulnerability to disaster?" In Mark Pelling (Ed.), *Natural disasters and development in a globalized world* (pp 19-42). London: Routledge.

Appiah-Opoku, Seth, & B. Hyma. (1999). "Indigenous institutions and resource management in Ghana." *Indigenous Knowledge and Development Monitor 7*(3), 15-17.

Cour, Jean Marie. (2001). "The Sahel in West Africa: Countries in transition to a full market economy." *Global Environmental Change 11*, 31-47.

Coser, Lewis A. (1956). *The functions of social conflict.* Glencoe, IL: The Free Press.

Dejene, Aredo, & Ame Abdurahman. (2002). "The root causes of conflict among the southern pastoral communities of Ethiopia: A case study of Borana and Degodia." In *Conflict in the Horn: Prevention and resolution* (Report of Ethiopia National Workshop). Addis Ababa, Ethiopia: OSSREA.

Fiki, Charles, & Bill Lee. (2004). "Conflict generation, conflict management and self-organizing capabilities in drought-prone rural communities in north-eastern Nigeria: A case study." *Journal of Social Development in Africa 19*(2):25-48.

Haarsma, Reindert J., Frank M. Selten, Suzanne L. Weber, & Michael Kliphuis. (2005). "Sahel rainfall variability and response to greenhouse warming." *Geophysical Research Letters 32*, L17702.

Hoerling, Martin, James Hurrell, Jon Eischeid, & Adam Phillips. (2006). "Detection and attribution of twentieth-century northern and southern African rainfall change." *Journal of Climate 19*(16), 3989-4008.

Hulme, Mike, Ruth Doherty, Todd Ngara, Mark New, & David Lister. (2001). "African climate change: 1900-2100." *Climate Research 17*,145-168.

Jenkins, Gregory S., Amadou T. Gaye, & B. Sylla. (2005). "Late 20th century attribution of drying trends in the Sahel from the Regional Climate Model (RegCM3)." *Geophysical Research Letters 32*, L22705.

Kamga, Andre F., Gregory S. Jenkins, Amadou T. Gaye, Adamou Garba, A. Sarr, & A. Adedoyin. (2005). "Evaluating the National Center for Atmospheric Research Climate System model over West Africa: Present-day and the 21st century A1 scenario." *Journal of Geophysical Research-Atmospheres 110*(D3), D03106.

Lebel, Thierry, Jean-Denis Taupin, & N. D'Amato. (1997). "Rainfall monitoring during HAPEX-Sahel: General rainfall conditions and climatology." *Journal of Hydrology 188-189*, 74-96.

L'Hôte, Yann, Gil Mahé, Bonaventure Somé, & Jean Pierre Triboulet. (2002). "Analysis of a Sahelian annual rainfall index from 1896 to 2000: The drought continues." *Hydrological Sciences Journal 47*, 563-572.

Lind, Jeremy, & Siri Eriksen. (2005, June). *The impacts of conflict on household vulnerability to climate stress: Evidence from Turkana and Kitui Districts in Kenya.* Human Security and Climate Change: An International Workshop, Holmen Fjord Hotel, Asker, Norway, 21-23 June 2005.

Lotsch, Alexander. (2006). "Sensitivity of cropping patterns in Africa to transient climate change." (CEEPA Discussion Paper No. 14). In *Special series on climate change and agriculture in Africa.* Pretoria, South Africa: University of Pretoria.

Millennium Ecosystem Assessment. (2005). *Ecosystems and human well-being: Desertification synthesis.* Washington, DC: World Resources Institute. Available online at http://www.millennium assessment.org/documents/document.355.aspx.pdf

Moore, Keith M. (Ed.). (2005). *Conflict, social capital and managing resources: A West African case study.* Cambridge, MA.: CABI Publishing.

Siebert, Stefan, Petra Döll, Sebastian Feick, & Jippe Hoogeveen. (2005). *Global map of irrigated areas* (Version 3.0). Frankfurt & Rome: University of Frankfurt & Food and Agriculture Organization.

Williams, I., F. Muazu, U. Kaoje, & R. Ekeh (1999). "Conflicts between pastoralists and agriculturalists in north-eastern Nigeria." In Onigu Otite & Isaac Olawale Albert (Eds.), *Community conflicts in Nigeria: Management, resolution and transformation* (pp. 184-219). Ibadan, Nigeria: Spectrum Books Ltd.