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CLIMATE CHANGE AND CONFLICT IN THE SAHEL:

FINDINGS FROM NIGER AND BURKINA FASO

MARCH 2014

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ARCC

African and Latin American
Resilience to Climate Change Project

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Cover Photo: Well in pastoral zone near Gadabeji, Niger, 2010. Julie Snorek, United Nations University, Institute for Environment and Human Security (UNU-EHS).

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AFRICAN AND LATIN AMERICAN RESILIENCE TO CLIMATE CHANGE (ARCC)

MARCH 2014

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ACRONYMS AND ABBREVIATIONS

AGRHYMET	*Centre Régional de Formation et d'Application en Agrométéorologie et Hydrologie Opérationnelle*
CAF	Conflict Assessment Framework
CCCAF	Climate Change and Conflict Assessment Framework
COFOB	*Commission Foncière de Base* (Rural Land Commission)
CONEDD	National Council for the Environment and Sustainable Development
CSAG	Climate Systems Analysis Group
ECOWAS	Economic Community of West African States
EIRENE	International Christian Service for Peace
FAO	Food and Agriculture Organization of the United Nations
FESS	Foundation for Environmental Security and Sustainability
FMNR	Farmer-Managed Natural Regeneration
FEWSNET	USAID Famine Early Warning Systems Network
GDP	Gross Domestic Product
IFPRI	International Food Policy Research Institute
INERA	Institute of Agricultural Research
IWRM	Integrated Water Resource Management
JPC	Sahel Joint Planning Cell
MCA	Millennium Challenge Account
NGO	Nongovernmental Organization
NMJ	Nigerien Movement for Justice
OCHA	United Nations Office for the Coordination of Humanitarian Affairs
OECD	Organization for Economic Cooperation and Development
ONEP	*Office National d'Edition et de Presse*
OSS	Observatory of the Sahara and the Sahel (Observatoire du Sahara et du Sahel)
PASMEP	Platform of Actions to Secure Pastoral Households
PNSR	National Program for the Rural Sector
RCP	Representative Concentration Pathway

RLGP	MCA Rural Land Governance Project
SCADD	Strategy for Accelerated Growth and Sustainable Development (Stratégie de Croissance Accélérée et de Développement)
SPCR	Permanent National Secretariat of the Rural Code (Secrétariat Permanent du Code Rural)
UN	United Nations
UNU-EHS	United Nations University, Institute for Environment and Human Security
USAID	United States Agency for International Development

ABOUT THIS SERIES

THE STUDIES ON CLIMATE CHANGE VULNERABILITY AND ADAPTATION IN WEST AFRICA

This document is part of a series of studies produced by the African and Latin American Resilience to Climate Change (ARCC) project that address adaptation to climate change in West Africa. Within the ARCC West Africa studies, this document falls in the subseries Climate Change and Conflict in West Africa. ARCC has also produced subseries on Climate Change and Water Resources in West Africa, Agricultural Adaptation to Climate Change in the Sahel, and Climate Change in Mali.

THE SUBSERIES ON CLIMATE CHANGE AND CONFLICT IN WEST AFRICA

Upon the request of the United States Agency for International Development (USAID), ARCC undertook the Climate Change and Conflict in West Africa series of studies to increase understanding of how climate change contributes to conflict. Other documents in the Climate Change and Conflict in West Africa series include: Climate Change and Conflict in the Sahel: A Policy Brief on Findings from Niger and Burkina Faso, Climate Change and Conflict in West African Cities: Findings from Lagos, Nigeria, and Accra, Ghana, and Climate Change and Conflict in West African Cities: A Policy Brief on Findings from Lagos, Nigeria and Accra Ghana.

EXECUTIVE SUMMARY

Given its arid climate, recurrent droughts, and humanitarian crises, the Sahel is linked closely in the public mind to the threat of climate change. Recent violence in Mali and news reports about Islamic extremists and transnational crime networks in the Sahel-Saharan regions of Africa have raised fears that the Sahel might become a zone in which violence and terrorism takes root and grows. The question also arises whether climate change and conflict in the Sahel are related in any way, and if so, what might be done to enhance resilience and prevent or mitigate conflict.

To help inform its new programmatic activities in the Sahel, USAID asked the Foundation for Environmental Security and Sustainability (FESS) to analyze the potential linkages between climate impacts and conflict in two countries in the heart of the Sahel: Niger and Burkina Faso. To guide the study, four research questions were posed:

- Does (or could) climate change contribute to the conditions for organized, political violence?
- Does climate change contribute to circumstances with high conflict potential linked to the use of natural resources by specific livelihood groups or identity groups? If so, how and why?
- What is the relationship of either of these types of conflict with resilience?
- What are possible programmatic options or approaches to enable USAID to invest more effectively in programs to build resilience and prevent or mitigate conflict?

Field research was carried out for the case study in June and October 2013. In both countries, a wide variety of climate experts, national and local government officials, social scientists, civil society representatives, and community leaders were consulted.

NIGER

Weak or flawed governance and coups have plagued Niger since independence in 1960. In 1974, a military coup overthrew President Hamani Diori. The proximate cause was Diori's failure to effectively respond to massive food insecurity produced by an extended drought that had struck the country. As Niger fell victim to the regional debt crisis of the 1980s, his successor, Seyni Kountché, failed to marshal resources to respond to successive drought-driven famines, especially the distress that afflicted and threatened the way of life of the minority Tuareg population. Many Tuareg left Niger for Libya, while others mobilized a variety of resistance movements that engaged in low-intensity conflict in pursuit of autonomy for the northern regions of the country.

Over the next two decades, failed or corrupt efforts to decentralize power were accompanied by two more flare-ups of Tuareg rebellion. In 2010, President Mamadou Tandja's administration collapsed with his unsuccessful extra-constitutional efforts to extend his tenure to three terms and his removal by the military. Today, despite growing development and security assistance from external donors, President Mamadou Issafou presides over weak political institutions and a fragile national scene, beset by the spillover effects of instability in neighboring countries and troubled by the lingering grievances and unmet expectations of Niger's own citizens.

The most important climate event of the last century in the Sahel was the "great drought" of the early 1970s and its successors in the mid-1980s. In Niger, the great drought was transformative, drying up

water bodies and drastically reducing vegetative cover over vast areas. Pastoralists in the north were especially hard hit, as the loss of forage decimated their herds.

While the country has received an increase in total rainfall since the 1990s, the 21st century has seen the return of a series of droughts and severe food insecurity in 2005, 2010, and 2012. Researchers also have noted what they characterize as changes in seasonal patterns (late arrival and early cessation of rains) and intense rain events.

There is not a strong consensus about future rainfall in the Sahel, but scientists have recently suggested the likelihood of a somewhat wetter Sahel, with more variable precipitation on all time scales, from intra-seasonal to multi-decadal, and projected increases in daily rainfall intensity rather than frequency. There is a strong consensus that increases in Sahelian temperatures will continue. Downscaled climate model projections for Niamey covering the period 2040-2060 compared to 1980-2000 anticipate an increase of between 1°C and 3°C. These projections indicate that Niger is likely to face difficult climate challenges ahead, with perhaps more total rainfall than in some previous decades but punctuated by unpredictability, soaring temperatures, dry spells, and intense storms.

Erratic rainfall and rising temperatures already intertwine with non-climate factors to increase livelihood vulnerability. Yields from rain-fed crop production have decreased over time due to the combined effects of population increases, environmental mismanagement, and climatic shifts. As more people require more land, fields cannot be left fallow to regenerate. Tree cutting to clear land for agriculture and for fuel wood has had a huge impact on soil erosion and soil quality all across Niger.

Yet, various forms of adaptation to climate variability have been pursued for many years in Niger, sometimes with notable success. After the droughts and famines of the 1970s and 1980s, native trees and shrub stumps still present within cleared fields were regenerated, reducing soil erosion and providing fuel wood, building materials, fodder, and food. Though slow at first to gain widespread acceptance, by 2006 farmer-managed natural regeneration (FMNR) had extended new tree cover over nearly five million hectares. While communities that had practiced FMNR were more food secure than those that had not, population growth meant that FMNR alone was not sufficient to stay ahead of Niger's food and livelihood needs.

New seed varieties for traditional crops are now being tried that come to harvest more quickly, and new crops like sesame and potatoes are being grown in some areas. Other agricultural adaptations seek to regulate water flows to prevent erosion and maintain soil moisture. These and other adaptive experiments are making some progress, but within the overall national context they are still limited in number and scope.

Many farming households have diversified, with the majority choosing livestock production to supplement household income. Conversely, many pastoralists have diversified by engaging in cultivation. There has been a convergence toward agropastoralism as a more resilient livelihood, and a strengthening of commercial activities. Resentments sometimes arise against those with the capital and connections to gain preferential access to land, water, and pasture.

In principle, cultivation is forbidden in the northern pastoral zone of Niger. There is, however, a strong northward extension of agriculture due to land pressures in the south. Both pasture areas and livestock routes are being cultivated, increasing the incidence of farmer-herder conflicts where this has occurred. Although reliable numbers are hard to come by, farmer-herder conflicts have almost certainly claimed hundreds of lives since the 1990s, and they continue to persist. Recent economic activities such as cutting pasture and wood, charcoal production, the encroachment of commercial farms into pastoral zones, and the fencing-in of large territories by rich and powerful individuals also have proceeded unchecked in some areas of the pastoral zone.

These cumulative forces—increasing climate variability and intensity, rapid demographic change, continual extension of agriculture to new lands, environmental degradation, and new forms of commercial activities—are configuring new situations of competition over resources that increase the potential for conflict. The Tuareg, who believe that their concerns never have been satisfactorily dealt with by the state, feel especially marginalized by the effect of these forces in northern Niger.

These conflicts do not take place in an institutional void. Niger's Rural Code provides a legal and institutional framework to protect the rights of all Nigerien citizens to have access to and use rural resources, including land, water, pasture, and forests. However, according to both government officials and development specialists, most of the population does not know, ignores, or disobeys the Rural Code. In part, this is because many rural groups still believe traditional leaders, especially those at the village or local levels, best handle conflict prevention and adjudication. But it is also a reflection of the fragility and weakness of the Nigerien state, whose reliability and effectiveness are skeptically viewed by most rural dwellers, especially pastoralists.

Traditional chiefs from predominantly Tuareg areas observe that while Niger's Rural Code attempts to organize the territory for both pastoral and agricultural purposes, it provides simpler and more easily verifiable means to claim land for sedentary groups. As a rule, they believe, farmers are better represented and better informed about legal processes, and thus are more likely to hold sway with local authorities.

The Rural Code retains the potential to reduce conflict in Niger significantly. Nevertheless, at present, there is extremely weak institutionalization of the most important legal provisions on the country's most climate-affected and contentious issues (natural resources and their use). In the context of a powerful population boom and increasing climate stresses, that situation is leading to persistent, though localized, conflict.

Conversely, there are few indications of strong linkages between climate change and large-scale violent conflict in Niger. Climate trends and the adaptive responses of different livelihood groups are more consequential for the kind of frequent, low-intensity, and localized conflict among farmers and herders already seen in many areas of the country. While the number of fatalities resulting from such conflict is usually low, the persistence of violent encounters complicates efforts to implement effective and sustainable development programs.

Although the probability is low, the effects of climate change in northern Niger, in combination with the rebellious history and unresolved grievances of the Tuareg population, could have the potential to produce more serious violence. The Tuareg never fully recovered from the effects of the great droughts of the 1970s and 1980s, and the loss of pastoral areas to rapidly expanding agriculture has left them in an insecure and unstable position. Many Tuareg also believe that inadequate (or discriminatory) government policies, including the Rural Code, frequently work against them. Further climate stresses or a severe climate shock with a weak response from the central government could plausibly spark a renewal of Tuareg rebellion in Niger.

BURKINA FASO

Burkina Faso has not had the sort of ethnic and cultural tensions that have sometimes destabilized Niger, but its political life has been subject to stronger ideological crosscurrents. Military involvement in politics took a revolutionary turn in 1983. Captain Thomas Sankara, supported by Blaise Compaoré and other officers, acquired power through a coup d'état. In 1987, Compaoré and his allies overthrew Sankara's "popular democracy" and established a new regime of "rectification." Compaoré proved to be a formidable political leader who was able to balance traditional political alliances and promises of new

democratic spaces, while maintaining support from the military. He maneuvered without serious challenge to his power for nearly a quarter century.

Between February and June 2011, however, Burkina Faso experienced a political crisis. Dissatisfaction in the military, student protests against police brutality, and fears in the business community over vandalism and assaults led to a crisis of insecurity in Ouagadougou and elsewhere. As the security situation deteriorated, many expatriates fled the country.

The deeper roots of disenchantment with the regime sprang from years of authoritarianism, impunity, and limits on political freedom. Under intense pressure, President Compaoré devised a series of reforms and reallocation of resources that temporarily shored up his support among key sectors and political supporters.

The matter of presidential succession in 2015 (Article 37 of the constitution prohibits Compaoré from another term of office) hangs over the entire political system as an unanswered question. In January 2014, with the political opposition stronger and better organized, thousands of demonstrators protested efforts by Compaoré to abolish constitutional term limits. In response, the president offered unconditional dialogue with the opposition, but a resolution of the political crisis was not in sight.

Burkina Faso's recent political instability is unfolding in the context of serious climate challenges that appear likely to worsen over time. Weather trends and impacts in Burkina Faso generally parallel those in Niger. According to the National Council for the Environment and Sustainable Development (CONEDD), the country has recently experienced increasing temperatures as well as greater rainfall intensity and variability. Downscaled climate model projections for 2000-2050 agree on temperature increases ranging from 1-1.5°C to 3-3.5°C across Burkina Faso. Climate model projections for mean annual precipitation do not reflect a clear consensus, although some evidence exists for the likelihood of more erratic and intense rainfall events.

In some areas of Burkina Faso, a negative cycle of mutually reinforcing climate impacts and human actions threatens to spiral downward. Desertification and harsh dry spells have degraded land quality and contributed to low agricultural productivity and food insecurity. To obtain new and more productive land for cultivation, many people have turned to tree cutting. The effects of deforestation include further soil erosion and degradation, which is then exacerbated by the rain and winds of more intense storm events. Nearly half of all available lands are degraded in Burkina Faso. The relative contribution of climate factors and human actions to this negative cycle is a matter of debate, but the net result is an extreme sense of livelihood vulnerability felt by the majority of people living in the countryside.

While tree-planting efforts have been mounted by some local groups, the survival rate of seedlings is low. With more erratic and unseasonal precipitation patterns, water management is an increasingly important adaptive response. Only around 12 percent of irrigable lands have been converted from rain-fed to irrigated agricultural production, although government officials believe that, if properly managed, the hydrological network composed by the country's five main rivers would permit the replenishing of groundwater. Broadly speaking, while there are efforts to increase artificial water reservoirs, strengthen local water committees, and promote integrated water resource management, both government officials and other interviewees agreed that water management in Burkina Faso has been poor.

Burkina Faso also has not had notable success with FMNR. The main constraint that has affected FMNR innovators in Burkina Faso has been the lack of clear land tenure or property rights. Burkinabé advocates of FMNR call for the securitization of land rights and the promotion of agroforestry parks for FMNR at the community level.

The Ministry of Agriculture plans to launch a national campaign to sensitize local communities to climate change challenges and possible adaptations. One main response will be the deployment of mobile water pumps to help communities access water sources, an effort that will need to be complemented by close monitoring and sound management of groundwater resources. As in Niger, farmers have acquired livestock when possible, and pastoralists have turned to cultivation to increase their resilience.

The challenges presented by land degradation and climate variability have spurred internal migration to more developed areas of the south and southwest, where irrigated agriculture and commercial investments are increasingly found, and to less developed areas in the east, where available land is relatively more abundant. In both instances, these demographic reconfigurations have contributed to conflicts over land. In the south, intra-familial disputes occur over the sale of land to "outsiders" from elsewhere in the country, while in the east disagreements are common over the duration and validity of tacit agreements allowing newcomers to cultivate unused plots of land. Nationally, the Ministry of Animal Resources roughly estimates that approximately 4,000 farmer-herder conflicts took place between 2005 and 2011.

Despite government fears that cross-border resource conflicts would be sparked by the arrival of refugees and their livestock from Mali, relief efforts have helped to manage the situation, and conflicts appear to have been limited. Within the country, Burkinabé pastoralists, squeezed by the progressive restriction of pastoral spaces and access to pastoral resources, face the potential for more frequent farmer-herder conflicts.

The institutional factor that increases the significance of these internal conflicts in Burkina Faso is the *Régime Foncier Rural* (Law on the Use of Rural Lands) of 2009, whose stated purposes include equitable access to rural lands for all actors in the countryside, the promotion of rural investments, sustainable management of natural resources, and preservation of social peace. Although it is not as far-reaching as the Rural Code in Niger, the Regime Foncier is a cornerstone in the efforts of the Government of Burkina Faso to maintain stability in the countryside, and implementation has been difficult. The rules and regulations are not well understood, and critical observers believe the government does not have the means to communicate it properly. The Millennium Challenge Account (MCA) provided support for the Regime Foncier, but was able to reach just 13 percent of the communes in the country.

The Regime Foncier has led to new conflicts at times, as uncertainties about its provisions and intent have raised questions for some families unsure about the future security of their land. Should they worry about losing the land? Should they consider selling it or taking other actions before new, unwanted arrangements are imposed on them? The decisions discussed or made by family members can lead to disputes—sometimes intergenerational in nature— that can turn violent and are sometimes fatal.

These sorts of mistaken fears about the Regime Foncier also have led some people to sell their land to speculators who exploit the situation, reinforcing perceptions that the new land laws are mechanisms intended for the use and benefit of the powerful. As support from the MCA winds down, the sustainability of the overall effort is a matter for concern. If stability in rural areas is indeed a prerequisite for building resilience, the sustained and successful implementation of the Regime Foncier is an essential part of the equation.

It is uncertain in what ways stability in rural areas is being enhanced or weakened by the rapidly expanding artisanal gold mining sector, which may be seen as an additional form of livelihood adaptation in the face of climate challenges. In the dry season, when cultivation becomes unproductive or impossible, some villages in Burkina Faso are seeing as much as 60 percent of their population leave to engage in artisanal gold mining. Approximately one million Burkinabé are now working in the artisanal mining sector for part of the year. The majority is men (including large numbers of minors) but thousands of women also depart for mining sites. As one development worker put it, "every project now faces the problem of disappearing labor." Child labor, school absenteeism, drugs, prostitution, toxic

chemicals, price distortions of basic goods and services in local markets, and the abuse of women are common in these unregulated settlements.

Artisanal gold mining in Burkina Faso cannot be thought of as a separate livelihood but rather as an increasingly intrinsic *part of* the livelihood strategies of people who otherwise live in agricultural communities. The question is whether those livelihood strategies can be thought of as "resilient" given the myriad harmful consequences of artisanal mining, especially the health and safety impacts on women and minors.

The only clear threat to stability in Burkina Faso is the question of President Compaoré's intentions and actions in relation to the 2015 elections. Tensions are likely to increase if uncertainties remain as that date draws closer, and they could get considerably worse if the president tries to manipulate events in a way that tightens his grip on power. A serious crisis related to weather events such as a severe drought or devastating floods could open such a possibility, but the likelihood of that confluence of circumstances is very low.

It is very probable, however, that conflicts over natural resources, partly caused by climate change and adaptive responses such as the turn to agropastoralism and internal migration, will continue to hamper Burkina Faso's efforts to achieve more rapid economic growth. Until the Regime Foncier is better understood and accepted by affected rural populations, many conflicts will result from fears and misunderstandings. The emergence of artisanal gold mining as a major new coping mechanism for populations in the countryside affected by climate impacts and other factors may add to the potential for conflict. Artisanal gold mining in Burkina Faso has become too large and consequential for development planners to ignore.

RECOMMENDATIONS

Resilient responses to the potential for conflict are grounded in formal and informal institutions. Given current demographic and environmental conditions, as well as current and future climate scenarios, more emphasis must be placed on community-level dialogue to advance the implementation of rural land laws in Niger and Burkina Faso. Three other issue areas require greater attention to enhance climate adaptation and strengthen resilience: landscape rehabilitation, water management, and public information on viable adaptive responses to climate variability. In Burkina Faso, a fourth area for attention is the need for measures to address the maladaptive aspects of the artisanal gold mining sector.

Specific recommendations include:

1. Reduce the "scramble" for land, water, and pasture by securitizing pastoral spaces in cultivation zones. Clear, verifiable, pastoral territories need to be established and mapped based on coordinated efforts with both pastoral and agricultural stakeholders.

2. Promote and disseminate the existing laws and norms of stewardship over pastoral spaces and designated zones. Where fallow and pastoral areas are compromised, there is little resilience for local populations. But where these spaces are reserved, livelihoods can more easily adapt to climate shocks.

3. Strengthen the village-level land commissions (COFOBs in Niger) and reconciliation committees (Burkina Faso). Bringing these formal systems into rural settings where households have relied upon customary agreements and informal designations of land holdings is not an easy task. The explanation and implementation of these legal mechanisms requires a small-scale, local approach with a longer-term time frame.

a) In Burkina Faso, efforts should be made to increase support for the Regime Foncier in USAID's Sahel Joint Planning Cell (JPC) focus areas while maintaining an acute awareness of conflict sensitivity.

b) In Niger, encourage efforts by groups that work with local COFOBs to take a more systemic view of farmer-herder conflicts (not just village by village) and seek to encourage greater participation and dialogue with pastoralists whenever possible.

4. Recognize the interconnectedness of different geographic zones and livelihoods. Support efforts (including, where possible, those of the Government of Niger's Strategy for Development in Sahel-Saharan Areas of Niger) to develop the northern areas of Tillabery, Maradi, and Zinder to secure and sustain development in the south. The combined effects of climate impacts and environmental degradation in more northern territories (the pastoral zones in Niger and the central plateau in Burkina Faso) produce adverse social consequences and increase conflict potential in the south.

5. Encourage project implementers to engage in dialogue with local communities to identify the location-specific reasons for past failures in FMNR and reforestation efforts in Burkina Faso (and where applicable, in Niger) and collaboratively design sustainable FMNR and tree-planting initiatives for land rehabilitation and livelihood resilience. Lessons learned with respect to the necessary institutional context and social organization are especially important, and experiences in Niger may have good potential to help inform initiatives in Burkina Faso.

6. Build on the lessons learned ("bright spots") on cooperative water management and sustainable livelihoods like those found in the Arziki Project in Tahoua, Niger, especially emphasizing the need for viable commercial production.

7. Encourage and help accelerate the ongoing and planned efforts of the Governments of Niger and Burkina Faso to provide citizens with relevant and timely forecasts on severe weather and anticipated seasonal variability. These efforts need to be accompanied by the dissemination and explanation of tangible steps that rural communities can take to respond to climate variability and maintain or build resilience.
8. In Burkina Faso, the artisanal gold mining sector should be recognized and treated as a major livelihood alternative for residents of climate-stressed communities that must be developed to be productive, environmentally sound, and safe (especially for minors and women).

1.0 INTRODUCTION

The humanitarian, development, and security concerns of the international community have come together in the Sahel. In 2012, the United States Agency for International Development (USAID) established the Sahel Joint Planning Cell (JPC) with the goal of "reducing poverty, hunger, and malnutrition…thereby enhancing the resilience of target populations." Working with governments to improve their capacities in risk reduction and management, the JPC seeks to increase "the ability of vulnerable populations to rebound from climatic shocks" (USAID 2013). In early November 2013, with representatives from the principal donor countries, multilateral banks, African regional organizations, and the African Union in attendance, United Nations Secretary-General Ban Ki-Moon announced a further collective effort to promote "governance, security, and resilience" in the Sahel during the next seven years (United Nations, November 5, 2013). For its part,

Given its arid climate, recurrent droughts, and humanitarian crises, the Sahel is closely linked in the public mind to the threat of climate change. The recent violence in Mali and news reports about Islamic extremists and transnational crime networks in the Sahel-Saharan regions of Africa have raised fears that the Sahel might become a zone in which terrorism takes root and grows. The question also arises whether these two concerns—climate change and conflict in the Sahel—are in any way related, and if so, what might be done to enhance resilience and prevent or mitigate conflict. Despite attention-grabbing headlines that suggest a clear causal connection between climate and conflict (a recent example asserted, "How Climate Change is Helping Al Qaeda," [*Global Post*, December 2, 2013]), the most recent research indicates that the links between climate change or variability and conflict are complex and indirect (Gleditsch, 2012; Kloos et al., 2013; OECD, 2013). Conflict remains a multidimensional phenomenon whose contingent emergence depends on the interplay of context-specific institutional, economic, social, and historical factors, with which climate change impacts often intertwine. The practical question is whether and how those intersections may produce consequences that increase the likelihood of conflict, intensify existing conflicts, or trigger outbreaks of conflict.

An interdependent relationship exists between resilience and conflict. Efforts to create or strengthen resilience may help reduce conflict, while the presence of conflict is likely to impede or even preclude the implementation of initiatives to increase resilience. In poor, vulnerable, and culturally diverse countries such as those of the Sahel, divergent climate adaptation strategies adopted by different groups (e.g., farmers and herders) to maintain resilience also may generate conflict (Snorek et al., 2012).

To help inform its new programmatic activities in the Sahel, USAID asked the Foundation for Environmental Security and Sustainability (FESS) to analyze the potential linkages between climate impacts and conflict in two countries in the heart of the Sahel: Niger and Burkina Faso. In addition to their history of droughts and food insecurity, both countries are marked by three factors that analysts have found strongly correlated with instability and conflict. They are populations with very low-incomes, landlocked, and their governments rely on sizable revenues from mineral exports (Collier, 2007). Rapid population growth produces further stresses. All of these factors add to the complexity of the challenges these countries face in building resilience and ensuring security for their citizens.

This report presents the political, economic, and demographic setting relevant to stability and instability for each country and examines recent and projected climate trends and vulnerabilities, followed by a discussion of key institutional weaknesses. The report concludes by identifying key climate adaptation

needs and promising activities, along with options for action that can help build resilience and reduce conflict in Niger and Burkina Faso.

2.0 BACKGROUND AND METHODOLOGY

Field research was carried out for the case study in June and October 2013. In Niger, the field work was carried out in the capital, Niamey, with two brief trips to Filingue and Tillakeina in the region of Tillabery and a focus group in Niamey with customary chiefs from Tchintabaraden and Abalak of the pastoral zone in Tahaoua. In Burkina Faso, the field work was conducted in Ouagadougou and the provinces of Yatenga and Loroum (near the Mali border) as well as Sanmantenga in the central plateau. In both countries, a wide variety of climate experts, national and local government officials, social scientists, civil society representatives, and community leaders were consulted, although time limitations and security considerations placed constraints on the scope of the field study.

The research methodology for the case study relies on core concepts of a seven-phase Climate Change and Conflict Assessment Framework (CCCAF) developed by FESS and components of USAID's Conflict Assessment Framework (CAF).[1] Both the CCCAF and CAF emphasize that conflict is always the result of the interactions of specific political, economic, social, historical, and cultural factors, and these require an understanding of the cleavages, frictions, and grievances found within the current national and local contexts. All societies are not only marked by such characteristics, but also possess a range of coping mechanisms or resiliencies that can be employed to reduce the likelihood of conflict. Formal and informal political, economic, and social institutions respond to threats in ways that are more or less successful in resolving or mitigating complaints and real or perceived injustices.

To guide the study, four basic research questions were posed:

1. Does (or could) climate change contribute to the conditions for organized, political violence?
2. Does climate change contribute to circumstances with high conflict potential linked to the use of natural resources by specific livelihood groups or identity groups? If so, how and why?
3. What is the relationship of either of these types of conflict with resilience?
4. What are possible programmatic options or approaches to enable USAID to invest more effectively in programs to build resilience and prevent or mitigate conflict?

Additional key factors considered in the analysis include:

- Exposure to extreme weather events, climate variability and trends, and physical setting;
- Population growth, density, and migration patterns;
- Vulnerabilities in relation to livelihoods and identity;

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[1] See Appendix I for more details on the CCCAF and see http://www.usaid.gov/gsearch/conflict%20assessment%20framework for more information on the CAF.

- Competing interests of livelihood groups;
- Coping and adaptive strategies and responses of government, civil society, and communities;
- Possible future scenarios; and
- Windows of vulnerability and "bright spots" (successful or promising forms of resilience).

Subjective judgments and personal perceptions are often relevant for research on instability and conflict. Individuals are the agents of conflict, and their readings of their personal and group circumstances form the basis for their actions. These sorts of considerations are important to keep in mind in assessing the mix of factors that may be contributing to potential conflict.

3.0 NIGER

3.1 WEAK GOVERNANCE AND RURAL LIVELIHOODS

Niger has been plagued by weak or flawed governance and coups since independence in 1960. Under French colonial rule, Niger was a backwater that received limited attention and few investments. One important consequence of this relative neglect was that traditional chiefs retained their power and influence at the local level (Clarke, 1981). The dominant ethnic group in the southwest, the Djerma-Songhai (around 20 percent of the population), were engaged most fully by the colonial administrators, while the Hausa, despite their greater numbers (around 55 percent of the population), were recruited less frequently.

Even more marginalized were the Tuareg nomads (around 10 percent of the population) and the Peul or Fulani (around 8 percent of the population), who resided in the vast north and northeast. In pre-colonial Niger, the Tuareg nomads held political dominance over territories and people living in areas stretching from the Sahara desert to northern Nigeria. Farmers paid tribute to pastoralists and sheltered them during drought events. With the arrival of the French, however, these systems began to break down.

FIGURE 1: NIGER

Source: United Nations, Department of Peacekeeping Operations, Cartographic Section, Map No. 4234, December 2004.

In the 1960s, the first president of newly independent Niger, Hamani Diori, governed during a period of good rainfall and steady agricultural production. In 1974, however, a military coup overthrew President Diori. While a combination of factors were at play, the proximate cause was Diori's failure to effectively respond to massive food insecurity produced by an extended drought that had struck the country, along with accusations of stolen food aid (Raynaut and Abba, 1990). His successor, Colonel Seyni Kountché, suspended the constitution and imposed authoritarian rule, sustained in part by a uranium boom in the 1970s. Kountché also promoted an expansion of agriculture into "marginal" territories by permitting any willing farmer who cleared the land to become its owner. However, as Niger fell victim to the regional debt crisis of the 1980s, Kountché also failed to marshal resources to respond to successive drought-driven famines, especially the distress that afflicted and threatened the way of life of the minority Tuareg population (International Crisis Group, 2013a). During this period, many Tuareg left Niger for Libya, while others mobilized a variety of resistance movements that engaged in low-intensity conflict in pursuit of autonomy for the northern regions of the country (Bouhlel-Hardy et al., 2008; Benjaminsen, 2008).

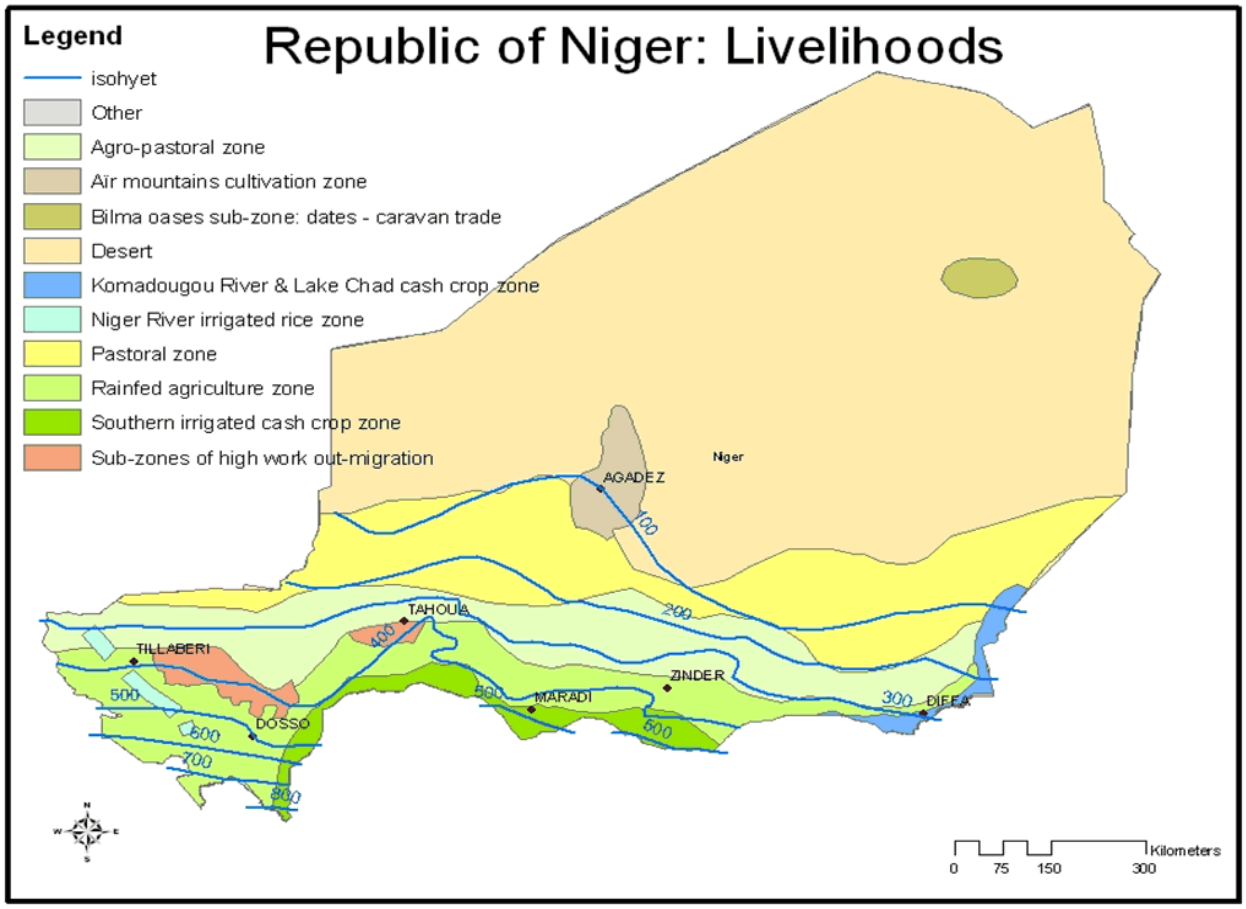
During the 1990s, state authorities negotiated and instituted a new set of reforms intended to decentralize state power and give more attention to the development needs of northern Niger. In practice, however, decentralization facilitated the spread of corruption among local administrators. A number of interviewees pointed to this period of "democracy" as the period in which much of the respect for the rule of law was lost, bringing about greater cynicism, eroding customary rule, and eventually rekindling the Tuareg rebellion. The following decade under President Mamadou Tandja (1999-2010), saw another flare-up of the Tuareg rebellion, and failed to produce any more durable solutions to the country's needs. Tandja's presidency ended with his unsuccessful extra-constitutional efforts to extend his tenure to three terms and his removal by the military. In the meantime, the Tuareg resistance itself came under question as figures associated with drug trafficking and outside Islamic extremist groups were alleged to have links with its principal organization, the Nigerien Movement for Justice (NMJ).

The overthrow of Muammar Gaddafi in Libya in 2011, and the coup in Mali in 2012, sent thousands of returnees from Libya as well as refugees from Mali across the border into Niger. To the south, the intensification of violence produced by Boko Haram also sent increasing numbers of refugees into Niger's southeast.

Today, despite growing development and security assistance from external donors, President Mamadou Issafou presides over weak political institutions and a fragile national scene, beset by the spillover effects of instability in neighboring countries and troubled by the lingering grievances and unmet expectations of Niger's own citizens. The living conditions of most Nigeriens are extremely difficult—Niger is ranked last in the 2012 United Nations (UN) Human Development Index (186 out of 186 countries)—and its youthful population of 17 million people is growing rapidly, with a 3.5 percent annual growth rate that is second only to Zambia in Africa.

As seen in Figure 2, Niger is essentially a rural and agrarian economy. All but 10 percent of the country's population lives less than 100 miles from the southern border of Niger, where rainfall is highest. As one moves further north, livelihoods increasingly shift from agriculture to agropastoralism and pastoralism, although the intermingling of livelihoods is more common than the map suggests. Rain-fed agriculture and livestock herding, done primarily through manual labor, employs 82 percent of the population and generates about 39 percent of the country's gross domestic product (GDP) (FAOSTAT, 2011). Primary rain-fed crop production includes millet, sorghum, cotton, and corn. Livestock (sheep, goats, camels, and cattle) are exported by the thousands to neighboring Nigeria, where they demand a higher price than in Niger. Despite Niger's agrarian character and the critical role of livestock exports, the largest portion of the country's export revenues comes from uranium mining based in the areas north of Agadez.

FIGURE 2: LIVELIHOODS IN NIGER



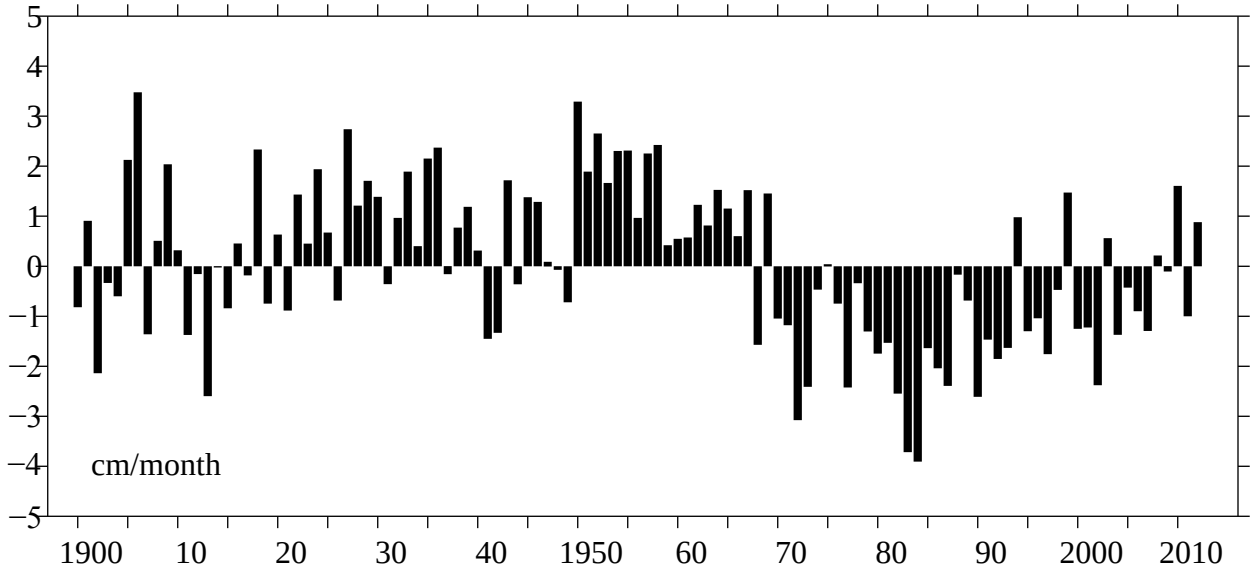
Niger's main livelihood zones and rainfall isohyets in millimeters. Source of map: Hannes Ettes, United Nations University, Institute for Environment and Human Security (UNU-EHS), based on FEWSNET, 2011.

Given the reliance of the overwhelming majority of the population on rain-fed cultivation and pasture and water for grazing, livelihood and food security in Niger are intimately linked to weather trends and environmental conditions. Climate variability can quickly lead to crisis, and both sedentary communities and mobile pastoralists seek to adapt to climate uncertainty in whatever way they can, sometimes leading to circumstances that bring about conflict. Often those conflicts result from unclear, unknown, or disregarded resource rights and responsibilities. Ideally, the country's institutions should help prevent or mitigate such conflicts, but institutional reality in Niger falls far short of that ideal.

3.2 CLIMATE VARIABILITY AND LIVELIHOOD VULNERABILITY IN NIGER

In both Niger and Burkina Faso, the most important climate event of the last century was "la grande sécheresse" or the "great drought" of the early 1970s and its successors in the mid-1980s. Most precipitation falls in these countries from June through October. As can be seen in the historical perspective provided by Figure 3, the 1970s and 1980s produced severe anomalies with much lower rainfall than preceding decades of the twentieth century. The great drought was transformative, drying up water bodies and drastically reducing vegetative cover over vast areas. Niger lost a great deal of tree cover; the department of Keita alone was transformed from forest-covered plateaus, slopes, and valleys to a completely barren landscape in 1984 (DiVecchia, 2007). Pastoralists in the north were especially hard-hit, as the loss of vegetative cover that could be used for forage decimated their herds.

FIGURE 3: SAHEL PRECIPITATION ANOMALIES (1900-2012)



June through October averages over 20− 10N, 20W− 10E.

1900-2012 Climatology NOAA NCDC Global Historical Climatology Network data. Source: University of Washington, Joint Institute for the Study of the Atmosphere and Ocean, http://www.jisao.washington.edu/data/sahel/sahelprecip19002012.pdf

There is agreement that Niger has received a moderate increase in total rainfall since the 1990s (Brooks, 2004; FEWSNET, 2012). Yet, USAID's Famine Early Warning Systems Network (FEWSNET) notes that "between 2000 and 2009, the average rainfall in Niger's crop growing districts was about 8 percent lower than the 1920-69 mean," and the twenty-first century has seen the return of a series of droughts in 2005, 2010, and 2012. In June 2010, USAID reported that "a recent Niger household food security survey estimates that 3.3 million people in Niger, representing approximately 22 percent of the overall population, will be highly or extremely food insecure and require emergency food assistance…" (USAID, 2010). According to the World Bank (2012), the 2012 drought combined with environmental degradation, population displacement, high grain prices, and poor food access to affect the food security of nearly 40 percent of Niger's population.

Researchers at the *Centre Régional de Formation et d'Application en Agrométéorologie et Hydrologie Opérationnelle* (AGRHYMET), a regional center in Niamey for the study of agro-meteorology and hydrology, also noted what they characterized as changes in seasonal patterns (late arrival and early cessation of rains) and intense rain events. While AGRHYMET has worked with the Niger Basin Authority on mapping flood hazards and risks in Niamey, there is limited national data on floods due to the weakness of hydrological and meteorological observing networks (World Meteorological Organization 2006).

However, there is a clear sense of changing patterns and rising concern among analysts with respect to the flood situation in Niamey. A study conducted by the *Observatoire du Sahara et du Sahel* (Observatory of the Sahara and the Sahel [OSS]) noted that after a generally wet period from the beginning of the twentieth century until 1967, the drier period of 1968–1993 led to a reduction of Niger River flow in Niger of 36 percent (OSS, 2011). The increase in rainfall since the 1990s has reversed that trend and has been punctuated recently by severe flood events in Niamey and elsewhere. In 2010, five regions (Tillabery, Tahoua, Maradi, Agadez, and Zinder) and the capital city were hit by floods, causing damage to infrastructure, shortages of potable water, losses to crops and livestock, and increased cholera risk

(International Red Cross and Red Crescent, 2010). The rains during August 2012 caused the flow rate of the Niger River to reach 2,473 cubic meters per second, which was the highest rate since 1929 according to the Observatory of the Niger Basin (Agency for Technical Cooperation and Development [ACTED], 2012). The United Nations Office for the Coordination of Humanitarian Affairs (OCHA) estimated that 520,000 people had been affected by flooding and 81 people had died (OCHA, 2012). In August 2013, the Niger River rose to nearly the same levels as 2010, causing losses to the irrigation works of rice-growing areas. That same month, Agadez received more than 100 mm of rain in two days, causing one fatality and the loss of many animals (*Office National d'Edition et de Presse* [ONEP], 2013). During the 2013 floods in Niger, nearly 135,000 people were affected and 32 deaths were recorded (OCHA, 2013).

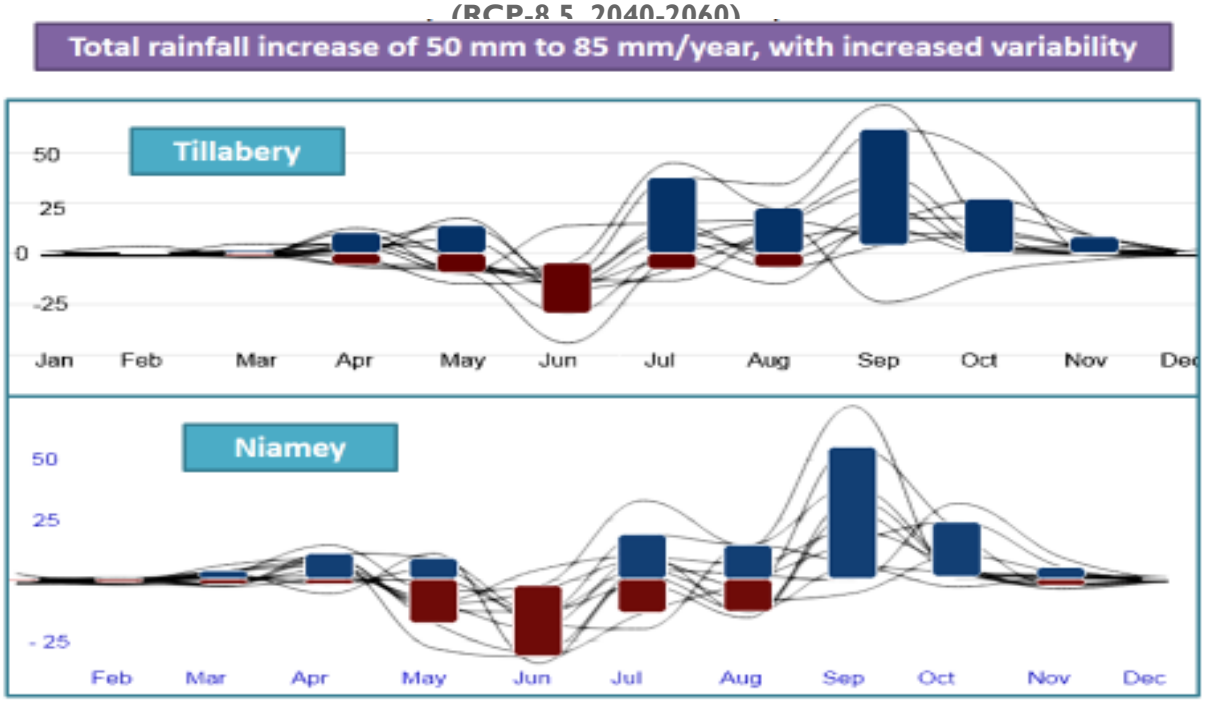
Population growth and settlement patterns appear to be contributing to the vulnerability of communities to floods. By the early 1990s, after the Niger River had receded in some areas, increasing coastal populations (having "forgotten" past climate trends) moved onto the former riverbanks to construct new dwellings and engage in cultivation. With the heavy downpours of recent years, river levels have risen and flooded inhabited areas, leading to the loss of infrastructure, crops, animals, and lives (Mapping for Niger, 2013). Efforts are being undertaken by AGRHYMET and the Government of Niger respectively to improve flood prediction and build or reinforce levees. In December 2013, the World Bank approved loans and grants for $106.7 million to strengthen Niger's resilience to natural hazards and climate change, noting that "the frequency and intensity of flooding in Niger is likely to increase due to climate change, population growth, insufficient planning, and environmental degradation" (World Bank, 2013).

There is not strong consensus about future rainfall in the Sahel, although Giannini et al. (2013) have recently argued that both historical and recent Sahelian weather data fit a climate model based on temperature differences between warming of the subtropical North Atlantic and global tropical oceans. Based on that understanding, they predict "an overall wetter Sahel, but more variable precipitation on all time scales, from intra-seasonal to multidecadal," with projected increases in daily rainfall intensity rather than frequency. Downscaled models for Tillabery and Niamey from the Climate Systems Analysis Group (CSAG) of the University of Cape Town for the years 2040-2060 suggest that total rainfall may increase by 50 mm to 85 mm per year, with increasing variability (see Figure 4). A set of climate models from the Cyprus Institute comparing 1980-1999 vs. 2031-2050 show a mean annual increase in rainfall in the Sahel of 9 percent, with 14 of 20 models in agreement that rainfall will increase (Bruggeman et al., 2010). Both the CSAG and Cyprus Institute models show increased variability, and rainfall is projected to decrease during the planting season according to the Cyprus models. FEWSNET, however, sees rainfall increases as uncertain and observes that "they appear to be linked to natural decadal variation in the Atlantic Ocean" (FEWSNET, 2012).

Both the CSAG and Cyprus Institute climate change models reflect a strong consensus that increases in Sahelian temperatures will continue. For Niamey, the CSAG models project an increase of between 1°C and 3°C for 2040-2060 (compared to 1980-2000), and the Cyprus Institute models anticipate a mean annual temperature increase of 2.4°C for 2031-2050 (compared to 1980-1999). All of these projections indicate that Niger is likely to face difficult climate challenges ahead, with perhaps more total rainfall than in some previous decades but punctuated by unpredictability, soaring temperatures, dry spells, and intense storms.

Erratic rainfall and rising temperatures intertwine with non-climate factors to increase livelihood vulnerability. Soil degradation, very limited irrigation, and poor access to fertilizers limit agricultural output in many communities. Yields from rain-fed crop production (millet, sorghum, cowpeas, and groundnuts) also have decreased in many areas over time due to the combined effects of population increases, environmental mismanagement, and climatic shifts. As more people require more land, fields

FIGURE 4: RAINFALL PROJECTIONS FOR TILLABERY AND NIAMEY (RCP-8.5, 2040-2060)



Source: CSAG, n.d.

cannot be left fallow to regenerate. According to FEWSNET, between the 1990s and 2000s, "farmland increased by 20 percent, whereas the population increased by 42 percent, resulting in a net decrease in food availability" (FEWSNET, 2012). Farmers, pastoralists, and technical experts all attest to the fact that cutting trees to clear land for agriculture and for fuel wood has had a huge impact on soil erosion and soil quality all across Niger. Focus group participants from Tillabery and Tahoua also anecdotally confirmed seasonal changes and erratic and intense weather trends.

3.3 LIVELIHOOD ADAPTATIONS AND FARMER-HERDER CONFLICTS

Various forms of adaptation to climate variability have been pursued for many years in Niger, sometimes with notable success. The droughts and famines of the 1970s and 1980s spurred aid organizations and farmers to work together to gradually develop techniques to restore natural vegetative cover. Native tree and shrub stumps still present within cleared fields were regenerated, reducing soil erosion and providing fuel wood, building materials, fodder, and food. This process of farmer-managed natural regeneration (FMNR) was slow to be adopted by large numbers of farmers until it got a significant boost from the demonstration effects produced by a large Food for Work program in Maradi in the late 1980s. By 2006, it was estimated that new tree cover extended over nearly five million hectares. While communities that had practiced FMNR were more food secure than those that had not, population growth meant that "FMNR alone" was not sufficient to "stay ahead of the food and livelihood needs of [Niger's] people" (World Resources Institute, 2008). Other important soil and water conservation techniques that increased the production of vegetable crops included the use of *demi-lunes* (crescent-shaped trenches) and *tassa* (improved planting pits).

Researchers at AGRHYMET said that to adapt to potentially shorter rainfall seasons, new seed varieties for traditional crops are now being tried that come to harvest in 70 or 80 days rather than the normal duration of 90 days, but there is a low rate of adoption of the new seed varieties by risk-averse farmers. New crops like sesame and potatoes also are being grown in some areas, but increases in overnight

minimum temperatures may reduce the number of locales where potatoes can be cultivated. In Tahoua, the Arziki Project uses stone check dams to regulate water flows to prevent erosion and maintain soil moisture. These experiments are making some progress, but within the overall national context they are still limited in number and scope.

Even where existing water resources are adequate, markets and institutions often break down. During a large focus group discussion with women in Louma (Image 1), where the local water table is high and water is easily accessible, participants described success in marketing garden vegetables for cash in the dry season with the assistance of Mercy Corps. (Most men from the village sought dry season work elsewhere.)

IMAGE 1: WOMEN'S FOCUS GROUP, LOUMA, TILLLABERY

Women in Louma are successful producers of garden vegetables for market. Credit: Katsuaki Terasawa

Irrigated agriculture in Tillakeina was less successful. At one cooperative, high-quality vegetables are produced, but transportation of the produce by refrigerated truck has collapsed and the goods are not getting to the markets in Niamey in a timely fashion. At the nearby *Rizicole de Toula*, rice is produced in abundance by the local cooperative but much of it is sitting unused in a huge warehouse. According to interviewees, processing of the rice is done by the Government of Niger in Niamey, but producers have not been paid as promised by the government. Without funds, the producers are unable to replace machinery or obtain fertilizers. Representatives of the cooperative said they had traveled to speak with both the Ministry of Agriculture and the Prime Minister's Office—and had been assured the problem would be rectified—but payment for the rice was still not forthcoming. Unable to see a way forward, they said they hoped a new project would come to help them (Image 2).

IMAGE 2: RICE PRODUCTION IN TOULA, TILLABERY

Rice producers in Toula said they were still awaiting payment from the government. Credit: Katsuaki Terasawa

There are a variety of other common forms of adaptation to climate variability (and other livelihood challenges) practiced by farmers and pastoralists (see Figure 5). Some of these adaptations can at times lead to tensions and conflict over the ownership, rights, and use of land and water resources. For example, disputes occur over highly valued cultivation areas, private wells are sources of corruption and contestation, and resentments arise against those with the capital to gain preferential access to land and water resources.

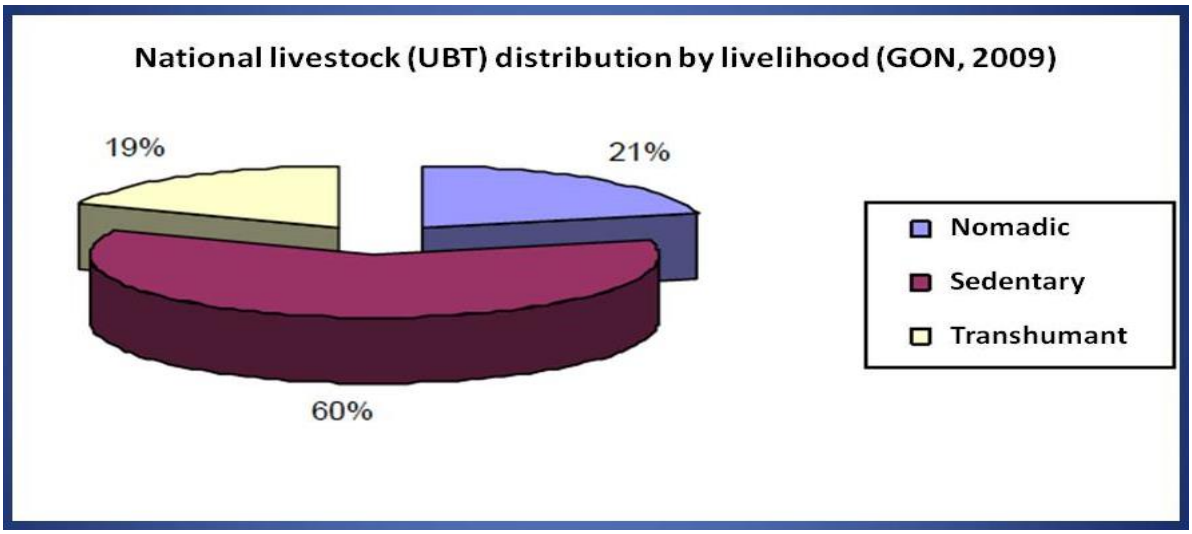
FIGURE 5: KEY ADAPTATIONS FOR THE TWO MAIN LIVELIHOOD SYSTEMS

Rain-fed Agriculture	Pastoralism
Market gardening	Changing migration patterns
Agricultural intensification	Change composition of herd
Purchase dispersed fields	Reduce herd size
Sell or rent land	Settlement in villages
Seasonal migration	Build personal wells
Animal ownership	Transport water to pasture-rich areas
Small commercial activities	Cut and store pasture
Collect/sell pasture and residues	Purchase fodder
Humanitarian aid	Remittances from migrants
	Shepherding for commercial herders

Source: Snorek et al., 2012

Many farming households have adapted to climate variability through livelihood diversification, with the majority choosing livestock production to supplement household income. Conversely, many pastoralists have diversified by engaging in cultivation. In essence there has been a convergence toward agropastoralism as a more climate resilient livelihood. Livestock serve as an insurance policy against crop failure, and they are becoming increasingly important in the daily lives of both sedentary and nomadic groups (see Figure 6).

FIGURE 6: DISTRIBUTION OF LIVESTOCK BY THE LIVELIHOOD OF THE OWNER



Source: 2009 Livestock Census of the Ministry of Animal Husbandry (cited in Fode, 2010)

Legislation that protects the rights of pastoralists has been difficult to implement in Niger and is often blatantly disregarded. In 1961, a law designated the limits to the zone of cultivation (*Loi N°61-05 fixant limite Nord des cultures*), essentially delineating a northern pastoral zone in an area considered too marginal for farming. In principle, cultivation is restricted to the southern agricultural zone, and pastoralists are allowed to access pasture and water resources by following designated livestock routes or after fields in the south have been officially cleared of agricultural production.

Nevertheless, high rainfall in the 1960s encouraged cultivators to push northward, a trend that surged again in the 1990s, spurred by the desires of local officials to increase their constituencies by issuing land claims. The northward extension of agriculture continues today because of high land pressures in the south, due especially to population growth and the adoption of sedentary lifestyles by pastoralists. Thus, pasture areas and livestock routes are being threatened by cultivation, which increases the incidence of farmer-herder conflicts, some of which have become violent (see Images 3 and 4).

IMAGES 3 AND 4: THE EXTENSION OF AGRICULTURE INTO PASTORALIST AREAS

Pastoral well surrounded by fields
Credit: Julie Snorek

Field in pastoral zone

The expansion of cultivation into the pastoral area and the vulnerability of pastoralists pose serious challenges to maintaining norms of natural resource management as well as cooperation and peace. Although reliable numbers are very hard to come by, farmer-herder conflicts have almost certainly claimed hundreds of lives since the 1990s, and they continue to persist. These conflicts are more complex than is sometimes recognized and actually fall into three categories—farmer-pastoralist, pastoralist-pastoralist, and farmer-farmer—with each of these having characteristic subcategories (Dan Dah and Salifou, 2008).

Farmer-pastoralist conflicts typically result from: 1) cultivation by farmers within pastoral routes, grazing pasture areas, or around water points; 2) damage to crops caused by livestock; 3) the disjuncture of timing between the seasonal arrival of livestock and a farmer's "release of the fields" (*libération des champs*); 4) the sedentarization of pastoralists in place seeking land rights; and 5) historical rivalries among ethnic groups (e.g., Zarma-Peul). Pastoralist-pastoralist conflicts normally revolve around two key areas of contention: 1) access to public water points, and 2) control of pasture areas, especially among differing ethnic groups. Farmer-farmer (or agrarian) conflicts range from simple disputes to others that are more legalistic and complex: 1) delimitation of the boundaries of farmers' fields (sometimes due to the disappearance of natural landmarks); 2) disputes among surviving family members over whether land was "given" or "loaned" to third parties; 3) in the absence of written records, disputes over the length of time land has been loaned to others; 4) disputes among family members about how inherited land should be divided; and 5) temporary court injunctions preventing transference of land immediately in advance of the arrival of the rainy season (to prevent food insecurity).

According to traditional leaders from Tahoua, one key difficulty and source of tensions among herders in the northern regions of the pastoral zone is the divergence in attitudes toward natural resource management between nomadic indigenous groups (groups who live year-round in the pastoral zone such as the Tuareg, Fulani, Wodaabe, and Arab) and fixed transhumant shepherds, who take their livestock on a seasonal basis northward from southern communities and neighboring countries. Shepherds from the south are in effect "free riders" who fail to safeguard the natural resources in the north and often do not heed the norms for accessing water and pasture. Furthermore, a new Economic Community of West African States (ECOWAS) agreement (N°97-007/PRN/MAG/EL) has resulted in neighboring countries making use of Niger's vast pastoral zone during the rainy season. These outside pastoralists

often have higher numbers of livestock and have been accused of overgrazing to the detriment of indigenous groups.

Recent economic activities such as cutting pasture and wood, charcoal production, the encroachment of commercial farms into pastoral zones, and the fencing-in of large territories by rich and powerful individuals also have proceeded unchecked in the pastoral zone. Another source of concern in the pastoral zone about north-south asymmetries is the lack of markets for livestock sales. Livestock are typically sold in southern markets, where they fetch a higher price, which limits the income in the pastoral zone for its most important means of production.

These cumulative forces—increasing climate variability and intensity, rapid demographic change, continual extension of agriculture to new lands, environmental degradation, regional agreements on pastoral mobility, and new forms of commercial activities—are configuring new situations of competition over resources that increase the potential for conflict. The Tuareg, who believe that their concerns never have been satisfactorily dealt with by the state, including benefiting from uranium revenues extracted from their lands, feel especially marginalized by the effect of these forces in northern Niger.

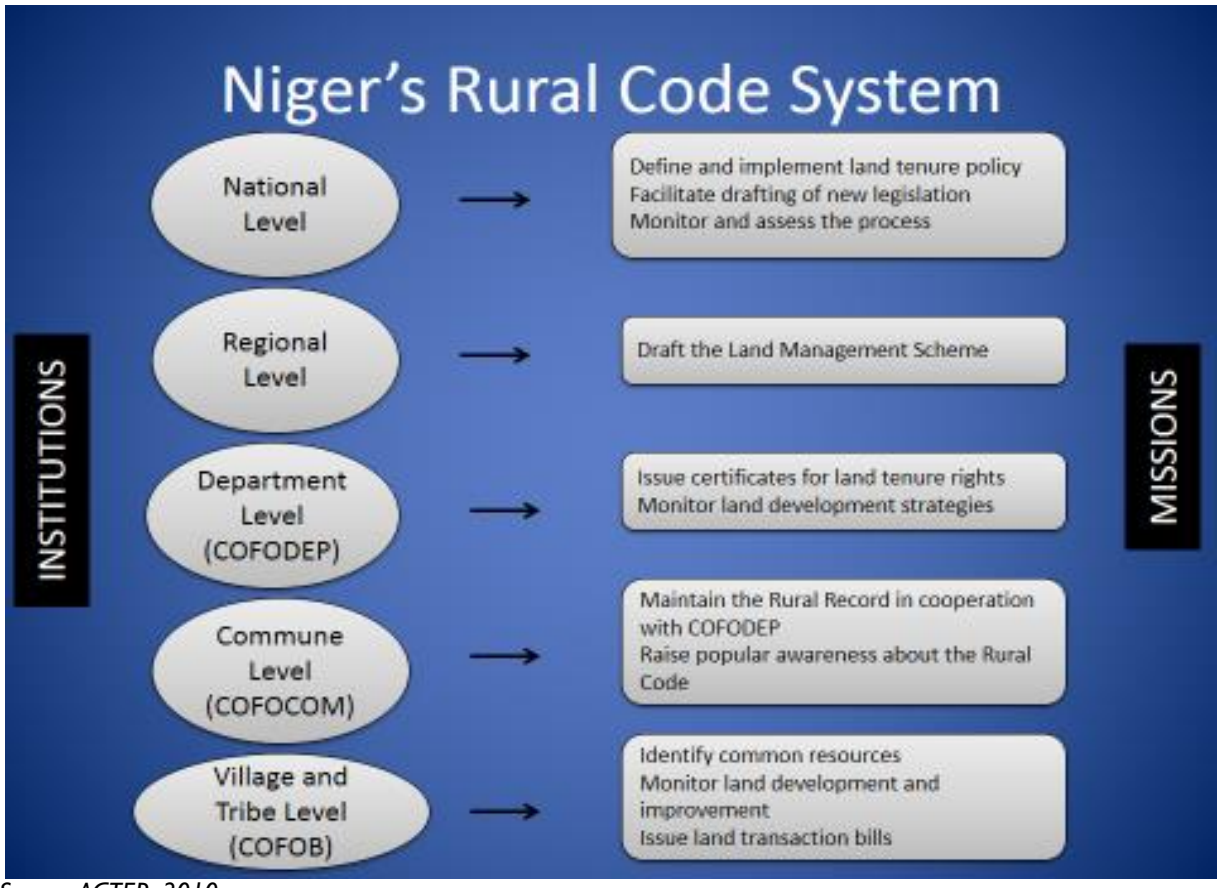
3.4 THE UNFINISHED AGENDA OF THE RURAL CODE

These conflicts, however, do not take place in an institutional void. To the contrary, the Rural Code (Ordinance N°93-15) of 1993 provides a far-reaching legal and institutional framework to protect the rights of all Nigerien citizens to have access to and use rural resources, including land, water, pasture, and forests. In principle, the Rural Code sets out the structures by which the rights and responsibilities of all citizens in relation to land use and land development are to be determined. To do so, it has established land commissions (*commissions foncières*) at multiple scales (department, commune, and village) to explain and implement (though not enforce) all elements of the Code (see Figure 7). This code includes provisions to protect both the mobility and migration routes for livestock, but enforcement is negligent to nonexistent.

In an interview, one official at the Permanent National Secretariat of the Rural Code (SPCR) said that, overall, "more than 60 percent of the population ignores the Rural Code, 30 percent know the Code but deliberately disobey it, and only 10 percent understand the law… Even the judges are still learning the Rural Code" (personal communication, September 30, 2013). In part, this situation is the result of the durability of customary rule at the local level. For many rural groups, the best mode of conflict prevention and adjudication is still perceived to be through traditional leaders, especially those at the village or local levels. However, it is also a reflection of the low capacity, fragility, and weakness of the Nigerien state, whose reliability and effectiveness are skeptically viewed by most rural dwellers, especially pastoralists.

With support from USAID, the village of Louma, located near the confluence of two pastoral routes in the region of Tillabery, has recently established a local rural land commission (*commission foncière de base* [COFOB]) made up of individuals from both the Hausa majority (farmers) and Fulani minority (cattle herders) groups, with leadership from the village chief and women's leader. While villagers were somewhat hesitant to openly speak about conflict, generally there was consensus that the new COFOB has been effective in conflict reduction. Yet the COFOBs, according to officials at the SPCR, have only 17 percent coverage in the country (only 3,000 villages). Since conflicts between farmers and herders or between farmers and farmers are typically dealt with at the village level, this lack of coverage explains much of the weakness and lack of understanding of the law.

FIGURE 7: STRUCTURES AND FUNCTIONS OF THE RURAL CODE



Source: AGTER, 2010

In focus group discussions, traditional pastoral chiefs from Tahoua observed that while Niger's Rural Code attempts to organize the territory for both pastoral and agricultural purposes, it provides simpler and more easily verifiable means to claim land for sedentary groups. As a rule, in disputes between pastoralists and agriculturalists, farmers are usually better represented and better informed about legal processes, and they are more likely to hold sway with local authorities. When pastoralists are forced by water scarcity to migrate in search of pasture or water, they encounter cultivated fields and fees for crop damage, which often leads to conflict. As a result, some pastoralists are settling into villages and cultivating, which they view as the codified means to gain land tenure and a way to provide a network of safe havens for pastoralists within the same groups (Oxby, 2011).

The Rural Code retains the potential to significantly reduce conflict in Niger. At present, however, there is extremely weak institutionalization of the most important legal provisions on the country's most climate-affected and contentious issues (natural resources and their use). In the context of a powerful population boom, environmental degradation, and climate challenges, that situation is leading to conflict.

4.0 BURKINA FASO

4.1 THE EROSION OF STABILITY?

Burkina Faso has not had the sort of ethnic and cultural tensions that have sometimes destabilized Niger, but its political life has been subject to stronger ideological crosscurrents. Known as Upper Volta until 1984, Burkina Faso has been dominated by the Mossi ethnic group found across its central plateau. Other ethnic groups include the Peul (or Fulani) to the north, Gourmantché to the east, and Jula and Bobo to the southwest.

FIGURE 8: BURKINA FASO

Source: United Nations, Department of Peacekeeping Operations, Cartographic Section, Map No. 4230, November 2004.

In the 1960s and 1970s, Burkina Faso experienced tensions between the assertion of single-party authoritarianism and the resistance it provoked from unions, customary leaders, and intellectuals. The military sought to stabilize the system and became an influential political actor (Kaboré, 2002).

Military involvement took a revolutionary turn in 1983. Captain Thomas Sankara, supported by Blaise Compaoré and other officers, acquired power through a coup d'état. While Sankara declared a "popular democracy," he made powerful enemies by abolishing traditional chieftaincies and opposing the power of unions. Some in the military found these policies counterproductive or too extreme. In 1987, Compaoré and his allies overthrew Sankara (who was killed in the coup) and established a new regime of "rectification" that reestablished the role of traditional leaders and took into account the interests of the business sector (International Crisis Group. 2013b). Compaoré proved to be a formidable political leader who was able to balance traditional political alliances and promises of new democratic spaces, while maintaining support from the military. He maneuvered without serious challenge through both the consolidation of his power and the management of electoral competition for nearly a quarter century.

Between February and June 2011, however, Burkina Faso experienced a political crisis. Student protests, dissatisfactions in the military, and fears in the business community over vandalism and assaults led to a crisis of insecurity in Ouagadougou. In February, students protested police brutality related to the death of a student held in custody. In March, soldiers protested a prison sentence given to soldiers who had beaten a civilian in a dispute over a woman. Further military complaints arose, including unpaid housing allowances and promised food rations, and in some urban areas, soldiers looted businesses, hotels, and homes. (Burkina Faso experienced food riots in several cities in 2008 and a food crisis in 2011.) Businesspeople protested the apparent inability of the Compaoré government to protect their lives and property. As the security situation deteriorated, many expatriates fled the country, and a number of embassies and bilateral donors considered departing as well.

The situation bore some resemblance to the "Arab Spring" in Egypt and Tunisia. Despite the immediate causes of instability, the deeper roots of disenchantment with the regime sprang from years of authoritarianism, impunity, and limits on political freedom. There were also economic complaints about the lack of employment opportunities for young people and the failure to produce shared benefits in a rapidly growing economy. These grievances raised generational and distributional concerns that indicated that the political fault lines beneath the country's façade of political stability and economic growth ran deep.

Under intense pressure, President Compaoré devised a series of reforms and reallocation of resources that shored up his support among key sectors and political supporters. He made a number of concessions to the military and to business interests and made efforts to engage traditional leaders in more meaningful dialogue.

The 2011 crisis was a point of inflection in the country's political development. While the regime was forced to consider more consensual ways of exercising power, the political opposition was strengthened and civil society groups became somewhat better organized. As a result, in 2012, the political opposition won the most seats to date in the National Assembly.

The matter of presidential succession in 2015 (Article 37 of the constitution prohibits Compaoré from another term of office) hangs over the entire political system as an unanswered question. Frictions exist between the government and the political opposition over the creation of a senate, which the opposition sees as a mechanism aimed at modifying Article 37 and perpetuating Compaoré's rule. In January 2014, after defections from the president's own party and with a fully mobilized political opposition, the largest street demonstrations to date protested efforts by Compaoré to abolish constitutional term limits. In response, the president offered unconditional dialogue with the opposition, but a resolution of the political crisis was not in sight.

While radical Islam is not present to the same degree as in Niger, some concerns do exist over outside influences that might exploit disenchanted youth. Social unrest could be triggered by any number of issues (jobs, human rights, corruption, military discontent, etc.) as long as the essentially authoritarian nature of the political system remains unchanged. Political analysts interviewed in Ouagadougou agreed

that if Compaoré does indeed try to change the rules of the game to continue in power, the potential for serious instability and conflict will rise sharply.

At the level of macroeconomic performance, the economy of Burkina Faso has done well over the past decade. According to the Ministry of Economy and Finance, economic growth averaged 5.2 percent from 2000 to 2009, despite the effects of the global recession in 2008-2009. In 2010, growth recovered to a 7 percent annual increase (Ministry of Economy and Finance, 2010). Cotton, one of the country's major commodities, also rebounded strongly in 2012 with a 57.5 percent increase over the previous year. Gold exploration and production has been skyrocketing.

Despite the impressive "topline" numbers, the overwhelming majority of the population—approximately 85 percent—remains primarily engaged in low-productivity rain-fed agriculture and pastoralism. Population growth is slower than in Niger, but the UN Population Division projects Burkina Faso's population to grow at a rate of 2.54 percent between 2000 and 2050, the sixth-fastest rate in the world (United Nations Department of Economic and Social Affairs, 2004). According to statistics from the government's Strategy for Accelerated Growth and Sustainable Development 2011-2015 (SCADD), the incidence of poverty in the country barely fell from 44.5 percent in 1994-1995 to 43.9 percent in 2009-2010. The Ministry of Economy and Finance states that, "These results show that the level of economic growth that has been realized and the mechanism of redistribution of it benefits have not been sufficient to bring about a significant reduction in the poverty rate." The SCADD also notes that progress on poverty reduction has been uneven across the country. While the central and southern regions have seen a reduction in poverty, the more arid and less-developed northern and eastern regions have seen either no progress or retrogression in poverty rates.

4.2 CLIMATE VARIABILITY AND LIVELIHOOD VULNERABILITY IN BURKINA FASO

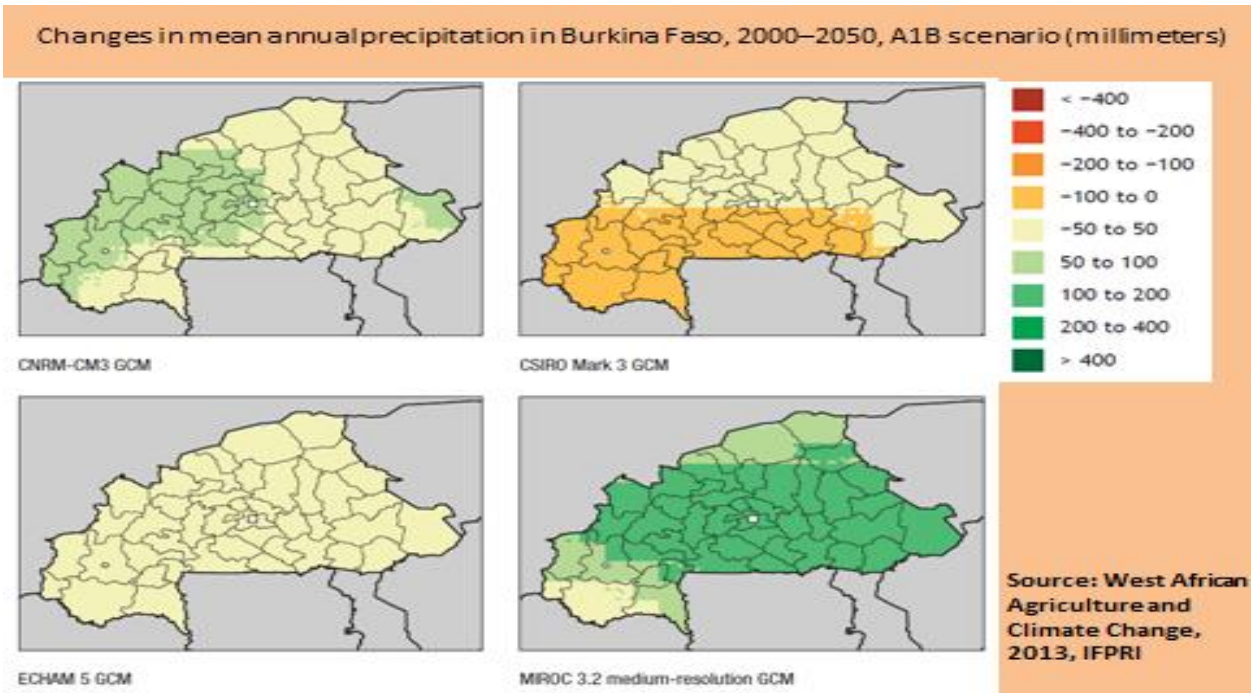
The same Sahelian precipitation anomalies for 1900-2012 noted in Figure 3 above constitute the backdrop for climate variability in Burkina Faso, which saw transformative effects from the great droughts of the 1970s and 1980s similar to those found in Niger. Tiganadaba et al. (2009) have explored rainy season patterns in Burkina Faso in more detail by comparing what they term the 1941-1970 "humid period" with the 1971-2008 "dry period." Analyzing rainfall data for the country's four climatic zones—Sahelian, Sub-Sahelian, North Sudanian, and South Sudanian (moving progressively from the northeast to the southwest)—they found "a reduction of 117 to 152 mm and 4 to 7 days respectively in the mean annual rainfall and the average number or rainy days, country-wide." At the same time, rainfall intensity increased in all of the country's climatic zones. The beginning of the growing season appears to be arriving later in the two southern Sudanian zones but arriving earlier in the two northern Sahelian zones. In each case, these effects on the length and timing of the growing period and the photoperiod sensitivity of crops may keep the productivity of staple crops and pasture low. However, they find that adjustments in seed varieties in response to these climate trends, while necessary, must be accompanied by more fundamental improvements in agricultural techniques (e.g., soil and water conservation and the use of fertilizers) to have a significant effect on crop yields (Tiganadaba et al., 2009).

FEWSNET (2012) characterizes rainfall trends slightly differently, seeing a decline in rainfall between 1950 and the mid-1980s, followed by a recovery in the 1990s, which then stalled in the first decade of the 2000s. As in Niger, there is clear evidence of increasing temperatures in recent years. FEWSNET estimates that between 1975 and 2009, "warming has been more than 0.5°C for Burkina Faso during the June-September rainy season," and it expects that warming trend to persist. At the National Council for the Environment and Sustainable Development (CONEDD), Louis Blanc Traoré, the principal author for the country's National Environment Report, confirmed what he said were clear signs of increasing temperatures as well as greater rainfall intensity and variability (personal communication, June 24, 2013).

Perceptions of increased rainfall intensity and early or unusual cessation of rainfall have been reinforced by recent events. In September 2009, Burkina Faso was struck by one of the largest flood events in its recorded history, a deluge of some 300 mm in one day that displaced approximately 150,000 people in Ouagadougou. At a large market of Fulani pastoralists in Loroum province near the Mali border, participants in a focus group emphasized the effects of the variability and intensity of weather in recent years. One herder lamented that with the persistence of long dry spells, "the bush is finished," and the group noted the disappearance of a number of grasses needed for their animals. Pastoralists stated that previously existing ponds have disappeared and the water table has fallen in some locations. Both the Fulani pastoralists and interviewees in Yatenga province also remarked upon high winds and intense rain in the storm events of recent years.

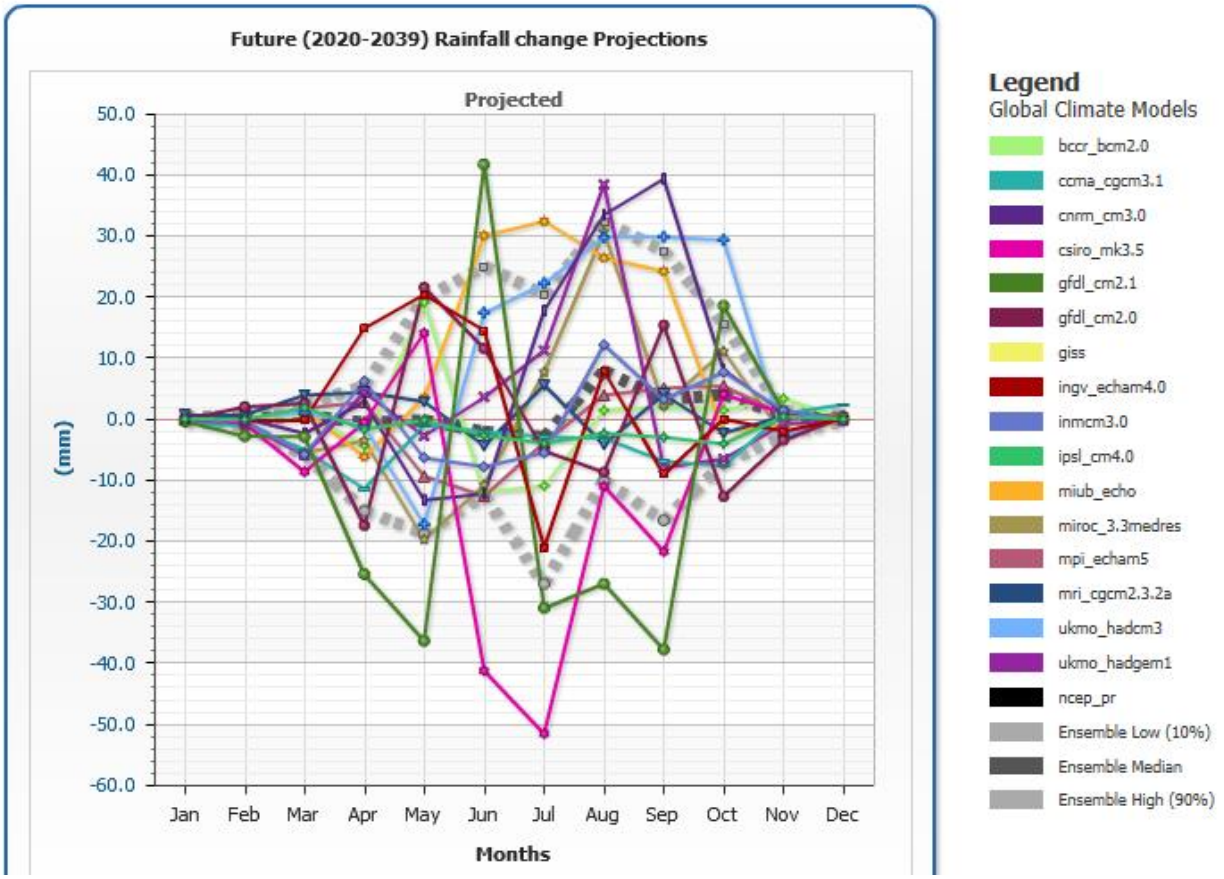
Looking toward the future, four different downscaled climate model projections for 2000-2050 collected by the International Food Policy Research Institute (IFPRI) agree on temperature increases ranging from 1-1.5°C to 3-3.5°C across Burkina Faso. Using the same four models, the projections for mean annual precipitation diverge, as can be seen in Figure 9. This divergence among climate models can be seen even more vividly in a comparison of 20 different models from the World Bank projecting rainfall change from 2020 to 2039 in Figure 10. More broadly, a background paper on climate change vulnerability in West Africa prepared for the USAID African and Latin American Resilience to Climate Change (ARCC) project observes that climate models "strongly disagree on future precipitation" in the region. Moreover, Taylor et al. (2012) conclude that models of the impact of anthropogenic emissions on the climate in West Africa do not adequately represent the strong decadal variability of rainfall, despite the fact that this "strong amplitude can mask for decades any rainfall evolution related to climate change" (cited in ARCC, 2013).

FIGURE 9: PROJECTED RAINFALL CHANGES IN BURKINA FASO, 2000-2050



Source: IFPRI, 2012

FIGURE 10: PROJECTED RAINFALL CHANGES IN BURKINA FASO, 2020-2039



Source: World Bank Climate Change Knowledge Portal, 2014

In some areas of Burkina Faso, a negative cycle of mutually reinforcing climate impacts and human actions threatens to spiral downward. Desertification, harsh dry spells, and the influx of refugees have imposed greater pressures on available land and contributed to low agricultural productivity and food insecurity. In combination with demographic pressures, low crop yields have led rural dwellers to pursue livelihood coping mechanisms whose short-term benefits produce deleterious longer-term results, including increased vulnerability to climate change. To obtain new and more productive land for cultivation, many people have turned to tree cutting. Obtaining fuel wood also can be a financial burden for households, as it is scarce and sometimes "more expensive than rice," according to one agricultural expert. In Yatenga, Ganaire Gary, the head of a group of rural artisans spoke of "an anarchy of tree cutting" in his province. Conversely, Fulani pastoralists in Loroum attributed the reduction in the number of baobab, karité, and tamarind trees in Loroum to drought conditions. Others point to human pressures and market forces (Mortimore and Turner, 2005). The effects of deforestation include further soil erosion and degradation, which is then exacerbated by the rain and winds of more intense storm events. According to the Food and Agriculture Organization of the United Nations (FAO), nearly half of all available lands are degraded in Burkina Faso, most of which are found in the north of the country. The relative contribution of climate factors and human actions to this vicious cycle is a matter of debate, but the net result is an extreme sense of livelihood vulnerability felt by the majority of people living in the countryside in Burkina Faso.

4.3 ADAPTATION, MIGRATION, AND LAND CONFLICTS

While some local groups have mounted tree-planting efforts, the survival rate of seedlings is low. Nacanabol Hamsetou, the president of the Association for the Promotion of Literate Women in Loroum, said that only 15 percent to 20 percent of trees planted in Titao survived, observing that people often fail to give the young trees the sustained attention that they require. Similar numbers were cited by the head of a nongovernmental organization (NGO) with agricultural projects in Sanmatenga, who observed that the trees were seen as not belonging to anyone in particular, and no one in particular cared for them.

Burkina Faso also has not had notable success with FMNR. In March 2013, a workshop with more than 60 participants from government, civil society, local communities, regional organizations, and foreign technical agencies was held in Ouagadougou to discuss agroforestry and food security, with a principal focus on FMNR. While a modest number of Burkinabé success stories in FMNR were presented, the main focus was on how a transition to larger-scale FMNR could be achieved, with presentation and discussion of the elements of Niger's success and the constraints experienced within Burkina Faso. The main constraint that had affected nearly all of the FMNR innovators in Burkina Faso was the lack of clear land tenure or property rights. For example, one person lost his land rights when the nearby town expanded its limits; another had his rights contested when the value of his property increased. Problems also arose from animals straying into the areas where FMNR was being practiced. The first main recommendation of the workshop participants was to support FMNR through securitizing land rights for suitable agroforestry sites, while the second was the promotion of agroforestry parks for FMNR at the community level (Reseau MARP Burkina, 2013). Niger's adoption of "very precise rules" to promote FMNR was noted as an example worth emulating.

With more erratic and unseasonal precipitation patterns, water management is an increasingly important adaptive response. Although there are efforts to increase artificial water reservoirs, strengthen local water committees, and promote integrated water resource management (IWRM), both government officials and interviewees agreed that water management in Burkina Faso has been very poor. According to one official from the Ministry of Agriculture, only about 10 percent of the nation's water resources are being properly managed in ways that enhance agricultural production. The National Program for the Rural Sector (PNSR) 2011-2015 notes that climate change, human activities, and increasing demand as well as "unequal sharing of water resources…and weak knowledge of water management" are all contributing to high levels of water stress in the country. The PNSR estimates that only around 12 percent of irrigable lands have been developed, while noting the presence of some 1,200 bodies of water (dams, lakes, ponds), and expressing confidence that "the hydrological network composed by the five main rivers (Mouhon, Nakambé, Nazinon, Comoée, Sourou, and Léraba) permit the replenishing of groundwater." In confirmation of observations heard during interviews with pastoralists, the PNSR estimates that pastoralists face a 50 percent water deficit during the dry season. The PNSR identifies the absence of any water policy for pastoralists as the principal cause of the failure to meet the needs of livestock herders (Government of Burkina Faso, 2012).

In 2014, the Ministry of Agriculture plans to launch a national campaign to sensitize local communities to climate change challenges and possible adaptations. One main response will be the deployment of mobile water pumps to help rural communities access water sources when their crops are threatened by lengthy dry spells, an effort that will need to be complemented by close monitoring and sound management of groundwater resources.

The combination of more people on less land, poor management of natural resources, and increasing climate variability has made the livelihoods of both agriculturalists and pastoralists in Burkina Faso more insecure. As in Niger, people try to adapt through livelihood diversification; farmers have acquired livestock when possible, and some pastoralists have turned to cultivation to increase their resilience.

Numerous farmer-herder conflicts over land and water resources similar in kind to those described for Niger take place throughout the country. The Ministry of Animal Resources estimates that approximately 4,000 such conflicts took place between 2005 and 2011 (Bonkoungou, 2012).

The challenges presented by land degradation and increasing climate variability have spurred internal migration as people search for alternative livelihood possibilities. Development specialists and government officials noted in particular the migration of people from Mossi areas of the central plateau to 1) more developed areas of the south and southwest, where irrigated agriculture and commercial investments are increasingly found; and 2) less developed areas in the east such as Gourma province, where available land is relatively more abundant. In both instances, these demographic reconfigurations have contributed to conflicts over land. In the south, intra-family and inter-generational disputes and "outsider-indigene" conflicts are common. Bala Sanou of the International Christian Service for Peace (EIRENE) observed that such disputes in the south are increasingly occurring among family members due to a clash between new values and perspectives (land as a commodity) and old ones (land as a community heritage) (personal communication, October 15, 2013). In the east, according to a representative of Catholic Relief Services working in the area, the Gourmantché people traditionally have allowed the use of available land to new arrivals, but dissenting family members are now increasingly disputing these settlers' land use rights (Vewonyi Adjavon, personal communication, October 9, 2013).

Despite fears of cross-border conflicts spilling over from refugees and their livestock arriving from Mali, this appears to have been limited. According to Dr. André Kiema of the Institute of Agricultural Research (INERA), who has been monitoring the situation closely in Séno, Oudalan, Soum, and Loroum, environmental pressures caused by the increased human and animal populations have been difficult, but relief efforts have helped to manage the situation, and conflicts appear to have been limited. Within the country, Burkinabé pastoralists, squeezed by the progressive restriction of pastoral spaces and access to pastoral resources, face the potential for more frequent farmer-herder conflicts.

The institutional factor that increases the significance of these internal conflicts in Burkina Faso is the *Régime Foncier Rural* (Law on the Use of Rural Lands) of 2009, whose stated purposes include:

- Ensure equitable access to rural lands for all actors in the countryside.
- Promote investments and increase the productivity of agropastoralism and forestry.
- Enable the sustainable and rational management of natural resources.
- Contribute to the preservation and consolidation of social peace.

Although it is not as far-reaching as the Rural Code in Niger, the Regime Foncier is a cornerstone in the efforts of the Government of Burkina Faso to maintain stability in the countryside to reduce poverty and promote economic growth. According to the PNSR, "the sustainable management of water, soils, and land use security in the countryside constitute the major challenges for Burkina Faso" (Government of Burkina Faso, 2012).

The legislation builds on principles of decentralization and consultation with the full range of rural actors, but its implementation has been difficult. Officials at the Ministry of Animal Resources described how the law provides a coherent framework for communities and provides the basis in principle for securing property rights and identifying zones devoted to specific economic activities. Yet, others argued that the rules and regulations are not well understood. René Millogo, the coordinator of the Platform of Actions to Secure Pastoral Households (PASMEP), an organization whose activities include conflict prevention, stated that "most people don't really know the law, and the government doesn't have the means to communicate it properly."

The Millennium Challenge Account(MCA) provided $59 million to support the Regime Foncier through its Rural Land Governance Project (RLGP), which trained (or is training) local and commune stakeholders in 47 communes. However, this represents just 13 percent of the communes in the country. According to Koudregma Zongo, project director of the RLGP, the Regime Foncier has been effective in preventing conflicts where it has been applied, but it also has led to new conflicts at times, as it sometimes opens up latent disputes among family members or internal migrants. Uncertainties about its provisions and intent have raised questions for some families unsure about the future security of their land. Should they worry about losing the land? Should they consider selling it or taking other actions before new, unwanted arrangements are imposed on them? The decisions discussed or taken by family members can lead to disputes that can turn violent and are sometimes fatal.

In the south and southwest, the shift toward market-based development has strengthened the concept of land as an alienable commodity rather than common property under customary rule. In part, this new view of property also reflects changing generational perspectives. The Regime Foncier is intended to bridge these perspectives through participatory mechanisms that both respect tradition and facilitate modern commerce. In this sometimes complex transition, mistaken fears about the Regime Foncier have led some people to sell their land to speculators who exploit the situation, thereby reinforcing perceptions that the new land laws are mechanisms intended for the use and benefit of the powerful.

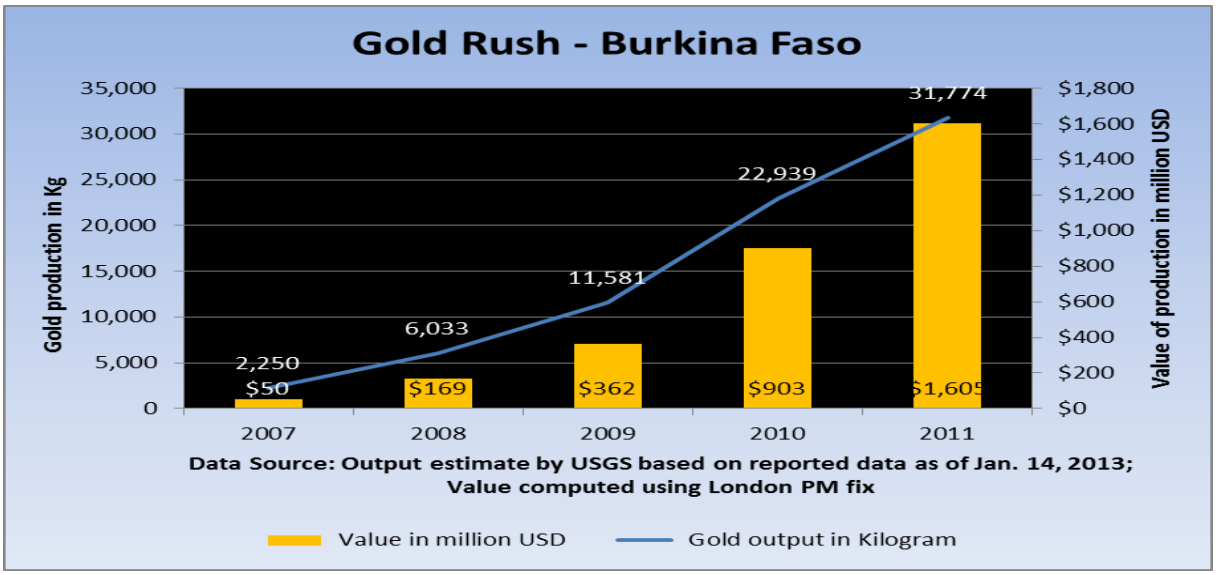
Like the Rural Code in Niger, the Regime Foncier is at once an area of institutional weakness and institutional promise. As one consultant working for the MCA observed in an interview, "In the short term, for several years, the Regime Foncier is going to cause conflict; in the medium to long term, it will reduce conflict" (MCA consultant, personal communication, October 14, 2013). As support from the MCA winds down, the sustainability of the overall effort is a matter for concern. The World Bank and other donors are expected to provide new support, but the responsibility for implementation will fall to the Government of Burkina Faso. If stability in rural areas is indeed a prerequisite for building resilience, the sustained and successful implementation of the Regime Foncier is an essential part of the equation.

4.4 THE ARTISANAL GOLD MINING BOOM: ADAPTATION OR MALADAPTATION?

The use of agropastoralism to strengthen livelihood resilience and the use of internal migration to find new land and economic opportunities are two main forms of climate adaptation in Burkina Faso. A relatively new and rapidly proliferating third form of possible adaptation to climate variability is artisanal gold mining. Figure 11 shows the dramatic expansion of overall gold production by nearly 15-fold between 2007 and 2010, with an increase in gold revenues of nearly 10-fold over the same time frame.

In the dry season, when cultivation becomes unproductive or impossible, some villages in Burkina Faso are seeing as much as 60 percent of their population leave to engage in artisanal gold mining. Approximately one million Burkinabé are now working in the artisanal mining sector for part of the year. The majority are men (including large numbers of minors) but thousands of women also depart for mining sites. The dry season exodus to artisanal gold mining sites is so extensive that, as one development worker put it, "every project now faces the problem of disappearing labor." Child labor, school absenteeism, drugs, prostitution, toxic chemicals, price distortions of basic goods and services in local markets, and the abuse of women are common in these unregulated settlements.

FIGURE 11: THE EXPANSION OF THE GOLD SECTOR IN BURKINA FASO



In a focus group of miners in Sanmatenga, the group leader said that the "concession" was owned by a businessman in the nearby town of Kaya and workers were paid by task (digging, grinding, washing), not by the value of their finds. At the height of the dry season, the mine site has a population of around 1,000 people, including up to 30 percent women. Miners use highly toxic mercury to amalgamate the gold. Most of those who come to the mine site said they would prefer to stay in their villages, but there is currently no productive activity in the dry season.

Gold miners not only add to and complicate competition over scarce land and water resources—possibly contributing to conflict—they also engage in practices that foul water supplies. In Ouagadougou, a representative from an NGO working on mining issues said that the Burkina Faso government is "very aware" of the many problems posed by artisanal gold mining but, at the moment, "there is a complete void on the development side of things." Because of its largely seasonal nature, artisanal gold mining in Burkina Faso cannot be thought of as a separate livelihood but rather as an increasingly intrinsic *part of* the livelihood strategies of people who otherwise live in agricultural communities. The question is whether those livelihood strategies can be thought of as "resilient" given the myriad harmful consequences of artisanal mining, especially the effects on the health and safety of women and children.

IMAGE 5: ARTISANAL GOLD PROCESSING AT A MINING CAMP IN SANMATENGA

At the height of the dry season, the population of the camp reaches 1,000 people. Credit: Katsuaki Terasawa

IMAGE 6: AMALGAMATING GOLD

Gold is amalgamated by hand using toxic mercury. Credit: Katsuaki Terasawa

5.0 FINDINGS AND RECOMMENDATIONS

As the multidimensional nature of conflict in Niger and Burkina Faso makes apparent, the role of climate change can only be understood in relation to other factors. The "great drought" of the 1970s and 1980s transformed the landscape in some areas of the Sahel with lasting effects, depleting water resources and reducing vegetative cover. In combination with population growth, these impacts provided incentives for people to cope by moving to new lands and cutting trees to create new areas for cultivation. Reduced tree cover contributed to soil erosion and degradation, increasing vulnerability to severe weather, and leading to a cycle of more tree cutting in search of productive lands. While farmer-managed natural regeneration met with some success in Niger, it was unable to keep pace with the needs of a rapidly growing population, and in Burkina Faso the lack of secure land tenure hampered the efforts of FMNR innovators to expand their limited experiments. In Niger, the pursuit of agricultural land pushed the frontier of cultivation progressively northward, where it increasingly encroached on the pastoralist zone and traditional routes of transit and stopover points. Conversely, pastoralists and their animals traveled through new areas of cultivation, damaging crops and triggering conflict. In Burkina Faso, internal migration with linkages to climate adversity has flowed from the central plateau to the more economically dynamic south and southwest or to the more land-abundant eastern parts of the country. In both instances, demographic change resulted in an increase of conflicts within families or with perceived outsiders. In both countries, continuing periods of drought led more and more people to diversify their livelihoods, either by keeping livestock or engaging in cultivation. The resulting convergence toward agropastoralism created further circumstances ripe for competition and conflict.

The weakness of Niger's institutional apparatus, exemplified by the woefully incomplete institutionalization of the Rural Code, allowed many natural resource conflicts to continue without a stabilizing response from the state. In areas where the Rural Code has been more effectively implemented, there are indications that it still can be an important tool for conflict prevention and mitigation. In Burkina Faso, the Regime Foncier is a newer and less comprehensive policy instrument than the Rural Code, but the incomplete institutionalization of the Regime Foncier and the more rapid Burkinabé transition toward the commercialization of agriculture has generated both fears and aspirations, adding to the potential for conflict.

This report began by referring to discussions about possible linkages between climate change and larger-scale conflict in the Sahel. **In general, our analysis has identified few current indications of that possibility within Niger, finding instead the kind of frequent, low-intensity, and localized conflict among farmers and herders typical of many areas of the country.** This form is, indeed, the most common one that conflict takes in Niger. While the number of fatalities resulting from such conflicts is usually low, the persistence of violent encounters complicates efforts to implement effective and sustainable development programs.

But the effects of climate change in northern Niger, in combination with the rebellious history and unresolved grievances of the Tuareg population, have the potential to produce more serious violence. The Tuareg never fully recovered from the effects of the great droughts of the 1970s and 1980s, nor did the government support the development of the region until recently. As a result, some of the Tuareg have been prompted by drought and increasingly difficult pasture conditions

to fully or partially sedentarize or migrate to urban areas. Some adapt by engaging in commercial activities in northern towns, but most prefer to remain in their livelihood despite difficult conditions. Cultivation moves steadily northward and the livestock of southern agropastoralists make use of northern pastures, giving them what many in the north resentfully view as entitlements in both the southern and northern territories. These factors, combined with drought, place further constraints on the adaptive capacity of pastoralists like the Tuareg.

The Rural Code, which was supposed to rationalize land use and reduce conflict, instead has been used (in the view of the Tuareg) in unfair and manipulative ways favoring the powerful—certainly not to help Tuareg herders. This use notably includes recent illegal fencing and commercialization by investors. One Tuareg interviewee stated, for example, that an entire valley has been deforested to produce charcoal for sale, saying, "this is unprecedented." **As a consequence, the Tuareg see themselves in an unfair, "ambiguous," and unstable position. On the one hand, they lack the desire and preparation (education, vocational training, or economic investment) necessary to transition to full sedentarization; and on the other hand, they have serious doubts about the viability of pastoralism since factors such as climate change, population growth, and inadequate (or discriminatory) government policies all work against them. In this context, further climate stresses or a severe climate shock with a weak response from the central government could plausibly spark a renewal of Tuareg rebellion in Niger.** In such a scenario, the involvement of Islamic extremists aiming to take advantage of and amplify instability and conflict cannot be precluded, and anti-Western propaganda has been increasing, especially since the Mali conflict.

The links between climate change and the potential for larger-scale conflict appear to be even more tenuous in Burkina Faso. Lacking an ethnically based source of instability as in Niger, the only clear threat to stability is the question of President Compaoré's intentions and actions in relation to the 2015 elections. Tensions are likely to increase if uncertainties remain as that date draws closer, and they could get considerably worse if the president tries to manipulate events in a way that tightens his grip on power. A serious crisis related to weather events such as a severe drought or devastating floods could open such a possibility, but the likelihood of that confluence of circumstances is very low.

It is probable, however, that competition and conflict over scarce natural resources, partly caused by climate change, will continue to hamper Burkina Faso's efforts to achieve more rapid economic growth. Until the Regime Foncier is better understood and accepted by affected rural populations, many conflicts will result from fears and misunderstandings based as much on perceptions as on realities. The emergence of artisanal gold mining as a major new coping mechanism for populations in the countryside affected by climate impacts may add to the potential for conflict, or it may simply complicate efforts to build sustainable and resilient livelihoods. In either case, artisanal gold mining has become too large and consequential for development planners to ignore.

If the aim of new assistance programs in the Sahel is to build climate resilience, the strengthening of institutions that can prevent or mitigate conflict over climate-affected natural resources is essential. Rural land tenure laws in both Niger and Burkina Faso have not been implemented with sufficient effectiveness to ensure that they are widely understood and accepted. The lack of effective governance is apparent in all areas of society in these countries, not just land tenure; but given current demographic and environmental conditions as well as current and future climate scenarios, considerably more emphasis must be placed on the implementation and dissemination of these bodies of legislation in both countries. Specific recommendations related to this goal follow:

1. Reduce the "scramble" for land, water, and pasture by securitizing pastoral spaces in cultivation zones. Clear, verifiable pastoral territories need to be established and mapped based on coordinated efforts with both pastoral and agricultural stakeholders.

2. Promote and disseminate the existing laws and norms of stewardship over pastoral spaces and designated zones. Where fallow and pastoral areas are compromised, there is little resilience for local populations. But where these spaces are reserved, livelihoods can more easily adapt to climatic shocks.

3. Strengthen the base-level land commissions (COFOB in Niger) and reconciliation committees (Burkina Faso). Bringing these formal systems into rural settings where households have relied upon customary agreements and informal designations of land holdings is not an easy task. The explanation and implementation of these legal mechanisms requires a small-scale, local approach with a longer-term time frame.

    a) In Burkina Faso, efforts should be made to increase support for the Regime Foncier in JPC focus areas with an acute awareness of conflict sensitivity. Community fears and misunderstandings are likely to persist in the short term.

    b) In Niger, encourage efforts by groups that work with local COFOBs, such as Mercy Corps, to take a more systemic view of farmer-herder conflicts (not just village by village) and seek to encourage greater participation and dialogue with pastoralists whenever possible. Some steps include:

        i) Greater inclusion of transhumant and sedentary pastoralists in COFOB meetings/dialogue;

        ii) Greater exposure of local officials to on-the-ground-dynamics of farmer-herder conflicts, with representatives from both groups present; and

        iii) Periodic herder "festivals" for transhumants to explain and reinforce codes and norms.

4. Recognize the interconnectedness of different geographic zones and livelihoods. Support efforts (including, where possible, those of the Government of Niger's Strategy for Development in Sahel-Saharan Areas of Niger) to develop the northern areas of Tillabery, Maradi, and Zinder to secure and sustain development in the south. In both Niger and Burkina Faso, the combined effects of climate impacts and environmental degradation in more northern territories (the pastoral zones in Niger and the central plateau in Burkina Faso) produce adverse social consequences and increase conflict potential in the south.

Three other issue-areas require greater attention to enhance climate change adaptation, strengthen resilience, and reduce the potential for conflict: landscape rehabilitation, water management, and clear and timely public information on viable responses to climate variability. In Burkina Faso, a fourth area for attention is the need for measures to address the maladaptive aspects of the artisanal gold mining sector.

Recommendations in these areas:

5. Encourage project implementers to engage in dialogue with local communities to identify the location-specific reasons for past failures of FMNR in reforestation efforts in Burkina Faso (and where applicable, in Niger) and collaboratively design sustainable FMNR and tree-planting initiatives for land rehabilitation and livelihood resilience. Lessons learned with respect to the necessary institutional context and social organization are especially important, and experiences in Niger may have good potential to help inform initiatives in Burkina Faso. The development of schemes with market linkages should be encouraged wherever possible.

6. Build on the lessons learned ("bright spots") on cooperative water management and sustainable livelihoods like those seen from the Arziki Project of the National Cooperative Business Association CLUSA International (NCBA CLUSA) in Tahoua, Niger, especially emphasizing the need for viable

commercial production. The relevance of these lessons for other, less successful initiatives—such as failed efforts at rice production using valley or check dams in Burkina Faso—should be explored.

7. Encourage and help accelerate the ongoing and planned efforts of the Governments of Niger and Burkina Faso to provide citizens with relevant and timely forecasts on severe weather and anticipated seasonal variability. These efforts need to be accompanied by the dissemination and explanation of tangible steps that rural communities can take to respond to climate variability and maintain or build resilience.

    a) In Niger, explore ways of working with the Niger Directorate of Meteorology, which has a clear commitment to improving its forecasting and services in support of agriculturalists and pastoralists through collaborative efforts. This work might begin with pilot initiatives in JPC project areas.

    b) In JPC project areas in Burkina Faso, explore ways of supporting the Ministry of Agriculture in providing communities with information on climate change and sustainable groundwater management. Contingent on the state of local water supplies, this may include the timely provision of mobile water pumps in communities experiencing prolonged dry spells.

8. In Burkina Faso, the artisanal gold mining sector should be recognized and treated as a major dry-season livelihood alternative for residents of climate-stressed communities that must be monitored and regulated in ways that help make it productive, environmentally sound, healthy, and safe (especially for women and minors).

    a) USAID should work with the Government of Burkina Faso to reach these goals as a pragmatic response to existing realities, while keeping in mind that artisanal gold mining is in many ways a suboptimal livelihood of last resort.

    b) USAID should work with implementers to explore ways of promoting more resilient dry-season agricultural activities to help reduce the need for tens of thousands of people across the country to turn to artisanal gold mining. The exploration of water conservation techniques used for dry season agriculture in other communities in West Africa could be promoted through the model for water basin committees used successfully by the MCA in Dédougou and Banfora.

    c) Wherever possible, programs in Burkina Faso should target the participation and engagement of youth in environmental rehabilitation as a dry season activity. Tree planting as a commercial enterprise is one possibility; other alternatives should be explored by JPC project implementers.

As a final observation, it should be noted that many of these recommendations fall into the category of "no-regrets" measures. That is to say, while they are offered here as steps we believe will help reduce the likelihood of conflict, they are also, in the main, actions that will produce positive benefits for resilience and climate adaptation in general. Seen from that perspective, the cost-benefit analysis should tip even farther in their favor. Even where their influence on conflict might prove to be limited or uncertain, their intrinsic contributions to development and human security in the context of climate change are likely to validate their worth.

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APPENDIX I: CLIMATE CHANGE AND CONFLICT ASSESSMENT FRAMEWORK

Phase I: Identification of Study Areas

Through official documents, secondary literature, and expert interviews, identify regions, countries, or cities/communities in conflict-prone areas that have experienced extreme climate variability (e.g., droughts, floods, unseasonal temperature fluctuations).

Where possible, identify instances of conflict within these areas that may have had direct or indirect linkages to climate variability.

Phase II: Profile of the Study Areas

Analyze the linkages among economic, social, and environmental factors through the collection of quantitative and qualitative baseline and trend data.

Compile background information on the areas' weather and climate patterns and predicted future changes in climate.

Develop a preliminary assessment of potential political, economic, social, cultural, and historical cleavages that may contribute to instability or conflict.

Develop a preliminary assessment of the governance capacity and resiliency mechanisms of existing political, economic, social, and cultural institutions.

Identify the key concerns, grievances, and tensions that may be present. The profile should focus on the local unit of analysis but incorporate national, regional, and international influences.

Phase III: Analysis of Critical Climate Change Concerns

Identify which underlying issues, sectors, and resources potentially influenced by climate change are critical to stability. How are they critical? Who is affected when these are threatened? Who is affected when these are well managed? What have been and what could be the potential consequences?

Assess the impact of governance, with special attention to environmental governance,[2] on the identified issues, sectors, and resources. What mitigating or exacerbating role does it play?

Phase IV: Assess the Impact of Climate-Related Events

Confirm with selected communities the nature and characteristics of a specific climate-related event or specific period of climate variability.

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[2] Environmental governance is defined as the traditions and institutions by which power, responsibility, and authority over natural resources are exercised.

Investigate the responses applied to the recent climate-related event in the study areas. What range of response options did affected people and communities consider? What responses were applied? Who did affected people and communities reach out to for help? Were resilience-building strategies used? What were the results of those strategies?

What role did social, human, physical, financial, and natural capital assets play in exacerbating the potential for conflict or mitigating conflict/building resilience?

Assess why results were linked to improved resilience versus conflict potential. How did core grievances and social/institutional resilience play a role?

Phase V: Perspectives of the Affected Populations and Communities

Identify stakeholders interested in and affected by the climate-related event(s).

Collect information about the stakeholders' concerns, core grievances, and points of conflict; degree affected by the climate-related event(s); their response capacity; their perceptions of the social and institutional responses to the climate-related event(s); the means and resources for violent conflict; and the social, human, physical, financial, and natural capital assets that mitigated or prevented conflict.

Seek to identify the indicators of resilience versus conflict potential and the indicators of vulnerability to conflict.

Phase VI: Generate Future Scenarios

Develop scenarios based on the potential impact of similar climate-related events on the affected people or communities based on predicted future climate change patterns. What might be windows of vulnerability and opportunity? What bright spots might be built upon?

Phase VII: Complete Analysis

Identify lessons learned, best practices, programmatic gaps, and target areas and opportunities to improve the provision and coordination of interventions that can address climate change and climate-related conflicts in vulnerable regions or communities.

Provide a comprehensive assessment of the case study areas that explains the impacts of climate variability, core grievances and drivers of conflict, mitigating factors and windows of opportunity, projected future climate vulnerability, and the links between climate change and potential conflict or climate change and adaptive resilience.

Incorporate scenarios that suggest areas of future vulnerability to conflict and recommend potential ways in which international development assistance could make a positive contribution toward filling current programmatic gaps. The primary focus of recommendations will be on approaches and responses that are within USAID's manageable interest. This will include consideration of existing Mission and Agency programs and priorities vis-à-vis potential climate-related causes of conflict in order to identify gaps and possible areas of intervention.

A broader set of recommendations for local, national, and international stakeholders in government, civil society, and the private sector may be included in an expanded and publicly available version of the report.

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