

THE ROBERT S. STRAUSS CENTER™  
FOR INTERNATIONAL SECURITY AND LAW



CLIMATE CHANGE  
AND AFRICAN  
POLITICAL STABILITY

## “Ground Truthing” Vulnerability and Adaptation in Africa

By Jared Berenter

Edited by Joshua W. Busby

*March 2012*

# “Ground Truthing” Vulnerability and Adaptation in Africa

By Jared Berenter  
Edited by Joshua W. Busby

*March 2012*

Program on Climate Change and African Political Stability

Principal Investigator: Dr. Francis J. Gavin

Robert S. Strauss Center for International Security and Law  
The University of Texas at Austin  
2315 Red River Street  
Austin, Texas 78712  
Phone: 512-471-6267  
Fax: 512-471-6961  
fgavin@austin.utexas.edu

Contract/Grant # W911NF-09-1-0077

Jared Berenter is a graduate student at the LBJ School of Public Affairs and Lozano Long Institute of Latin American Studies at the University of Texas at Austin.

Joshua W. Busby is an Assistant Professor at the LBJ School of Public Affairs and Distinguished Scholar at the Robert S. Strauss Center for International Security and Law.

## Table of Contents

<b>Introduction: Changing Paradigms for a Changing Climate</b> .....	1
The Development Aid Dilemma.....	1
CCAPS and “Ground Truthing” in Africa .....	1
<b>Similarities and Differences in Vulnerability Assessments: Reconciling Opinions on the Ground with CCAPS Data</b> .....	3
Weighing the Impact of Population Density on Vulnerability .....	3
Defining and Locating Vulnerability to Drought.....	5
Vulnerability on the Move: Measuring Climate’s Impact on Pastoral Communities..	6
Cross-Border Spill-Overs: Should Vulnerability Sharply Change Across Borders?...	8
<b>Reconciling Donor and Recipient Approaches to Adaptation: Repackaging, Relabeling, and “Mainstreaming” the Adaptation Agenda</b> .....	10
Donor Definitions of Adaptation .....	10
Recipient Definitions of Adaptation .....	11
Applying the New Adaptation Agenda.....	12
Rethinking Economies of Scale .....	12
Rethinking Inter-State Cooperation .....	13
Rethinking Institutional Needs and Shortcomings .....	13
Attitudinal and Behavioral Barriers to Adaptation .....	14
<b>Conclusion: Reshaping Incentives to Transform Community Thinking</b> .....	16
Endnotes.....	17

## Introduction: Changing Paradigms for a Changing Climate

### **The Development Aid Dilemma**

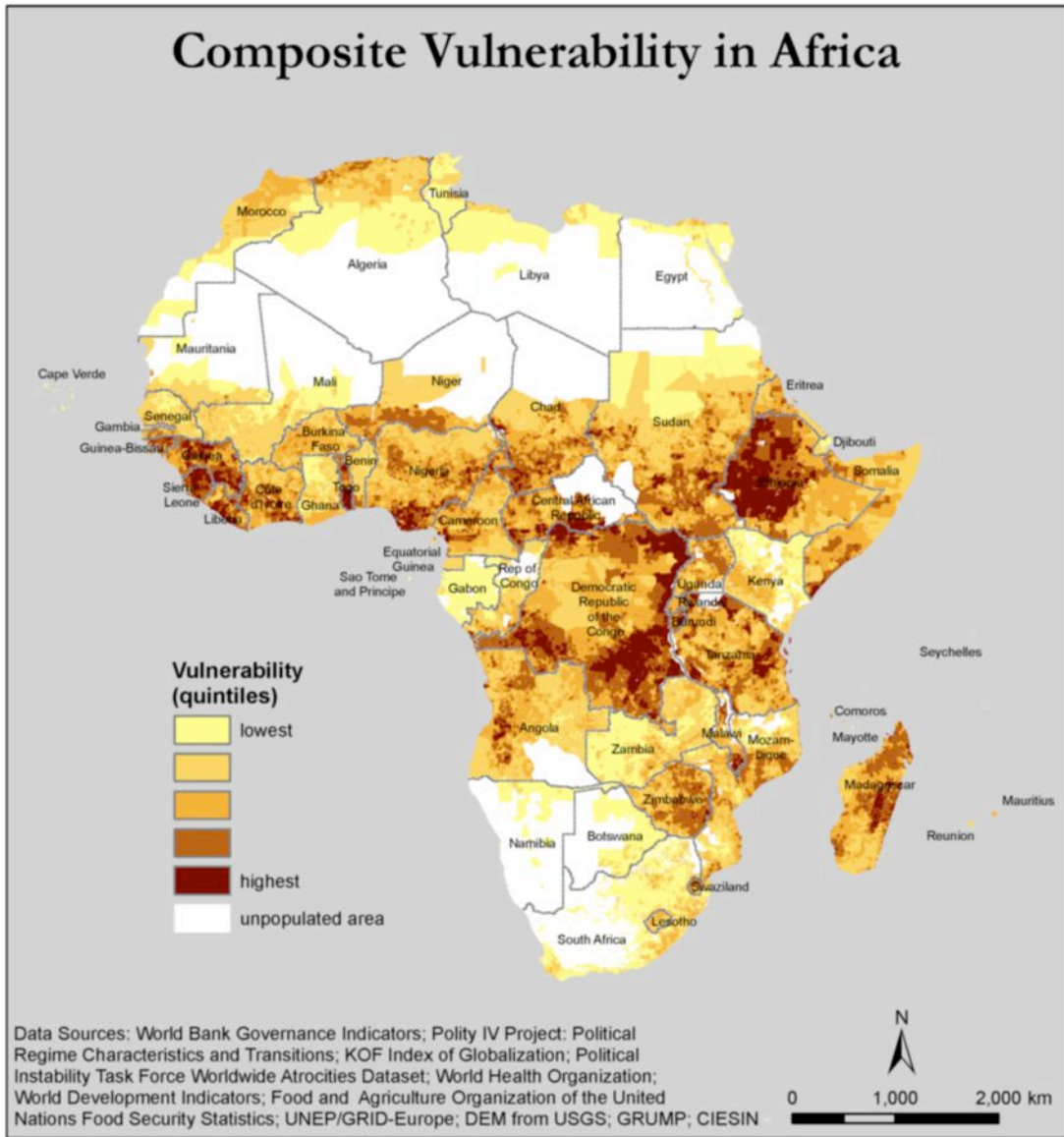
The international community's recognition of climate change as a humanitarian and security concern is likely to reshape development aid in Africa. Traditional development strategies, predicated upon seasonal rainfall and temperature patterns punctuated by often-predictable patterns of drought, floods, and cyclone activity, do not provide for the uncertainty of long-term climate change. Consequently, the focus of international donors, and by extension, aid recipients, is shifting to structural solutions that aim to build local capacity to adapt to climate change. The repercussions of this paradigm shift are significant. Definitions of vulnerability and adaptation will increasingly shape how donors allocate funds and how recipient governments and civil institutions spend them. Where and why places are vulnerable to climate effects will influence the priorities of both donors and recipients alike in how to prioritize resources. As a consequence, the adaptation agenda presents new and compelling questions about how to systematically identify climate change vulnerability and formulate appropriate adaptation policy responses. Ultimately the aid community must decide whether to integrate or disaggregate adaptation from traditional development projects, and how best to do so in order to ensure successful adaptation to climate change.

### **CCAPS and “Ground Truthing” in Africa**

To address these challenges, in 2009 the Robert S. Strauss Center for International Security and Law's Climate Change and African Political Stability (CCAPS) program commenced an independent study of climate change vulnerability in Africa. CCAPS used indicators of historical climate hazard exposure, population density, household and community resilience, and governance and political violence to create geospatial representations of national and sub-national vulnerability in Africa.<sup>1</sup> The CCAPS vulnerability model weights all four dimensions equally and combines them in a composite index of overall vulnerability (see Figure 1). CCAPS has a specific security focus in its representation of vulnerability, focusing on the potential for climate change to put large numbers of people at risk of death from exposure to climate-related hazards.

In 2010 and 2011, researchers traveled to select African countries, primarily in southern, eastern and central Africa, to test the validity of CCAPS' remotely generated vulnerability assessments – a process henceforth referred to as “*ground truthing*.”<sup>2</sup> Researchers met with academics, international organizations, regional organizations, bilateral donors, international and local development and environmental NGOs, government officials, and private sector actors, in an effort to gauge local perceptions of vulnerability and the nature of the response. The team assessed how actors on the ground conceptualize climate change vulnerability and adaptation; how and where adaptation projects are being implemented, why, and by whom; and what the major challenges are to adaptation.<sup>3</sup> Researchers typically began interviews by asking where local actors thought climate change vulnerabilities were located and why such locations were thought to be vulnerable. Researchers would only then share CCAPS maps for comment before proceeding to a discussion of adaptation responses.

Figure 1: The first iteration of composite vulnerability in Africa based on the CCAPS model that combines four components of vulnerability – physical exposure, population density, household and community resilience, and governance and political violence.



## Similarities and Differences in Vulnerability Assessments: Reconciling Opinions on the Ground with CCAPS Data

CCAPS' field interviews yielded results largely consistent with the program's expectations. Aid officials and local actors agreed with CCAPS geospatial assessments, for example, that coastal areas, inland watersheds, drought-prone areas (even if local conceptions of drought-prone areas sometimes differed from CCAPS conceptions), and areas with generally high physical exposure to extreme weather are most vulnerable. Like CCAPS, respondents also overwhelmingly felt that good governance is a key component to adaptation.

At other times, however, interviewees' opinions diverged notably from CCAPS' geospatial analyses. In many cases organizations embrace a more focused approach to vulnerability than CCAPS' comprehensive design. Some interviewees, for example, viewed vulnerability primarily in terms of food security. Others, often government officials, felt that infrastructure is a key component of vulnerability. The CCAPS climate vulnerability model contrastingly does not directly capture certain food-related factors, such as agricultural dependence, or infrastructure quality. Similarly, interviewees in Uganda and Ethiopia typically viewed vulnerability as a function of water security and physical assets. But while CCAPS' health and drought variables go a long way in capturing water access and variability, the findings may not accurately represent the water security of, say, a nomadic population.

Disparity in defining vulnerability is to be expected. For one, CCAPS' explicit focus on security and large-scale humanitarian risks is different from many local actors' emphasis on livelihoods. In addition to the reasons cited above, differences may also be explained by uncertainty regarding the explanatory power of climate change. Much environmental degradation, climate-related or otherwise, may in fact be caused by human behavior that is only tangentially related to climate. A representative of a Scandinavian country embassy in Tanzania, for example, refuted claims that the glacier on Mount Kilimanjaro is melting due to climate change, arguing instead that the phenomenon is due to excessive deforestation on the mountain's slopes.

Yet even where there is consensus on the nature and causes of vulnerability, disparities persist on the degree, location, and nature of vulnerability. Exploration into the reasons for these disparities is thus merited. For purposes of furthering the adaptation discourse, this paper offers four preliminary explanations for such disparity: (1) Rural or urban biases in assigning weight to vulnerability; (2) Divergence in defining, locating, and assessing vulnerability specific to drought; (3) Institutional prioritization of either agricultural or pastoral sources of vulnerability; and (4) Imprecision in determining cross-border vulnerability.

### **Weighing the Impact of Population Density on Vulnerability**

Climate change-related events will likely impose new and greater demands on infrastructure and resources, including food, water, and medical care, in both urban and rural settings. The CCAPS vulnerability model assumes that these demands will be higher in densely populated areas than in rural areas, which might be accentuated in the future if climate change causes significant rural-urban migration. With this in mind,

population density constitutes 25 percent of CCAPS' vulnerability model. Interviews on the ground, however, produced mixed views on the impact of population density on vulnerability. In the majority of cases, CCAPS assigns more vulnerability to urban areas than do local actors, many of whom focus more on the needs of rural areas.

The local perception that climate change vulnerability is concentrated in rural areas was perhaps best articulated by a Forestry & Environmental Management Specialist from a Western donor in Kenya, who argued that less populated regions receive less rain, are less developed, less educated, and have restricted sources of income. Accordingly, the official felt that rural regions have greater vulnerability than their urban counterparts, despite the fact that fewer people are affected. Drought in the (more populated) center of Kenya, the specialist said, is likely to lead to fewer deaths than in other regions.

Other interviewees agreed. A staffer at a Kenyan NGO in Nairobi felt that rural areas are most vulnerable because of dependence on rain-fed agriculture. Likewise, officials from a Nairobi-based intergovernmental agency charged with mapping and monitoring development indicators such as resources, hazards, demographic movements, and conflict, identified the arid and semi-arid areas in East Africa, such as the Karamoja region in Uganda and parts of northern Kenya, as vulnerability hotspots. Another staff member from the same organization suggested that pastoral areas that transcend national borders are exceptionally prone to extreme weather and to conflict. The two officials questioned CCAPS' drought-related vulnerability findings in south-central Kenya, saying the findings failed to adequately capture the exposure of chronic water scarcity in northern Kenya and the northeast near the Somali border. Indeed, in CCAPS' original mapping work, CCAPS located higher vulnerability in the more populous region of southwestern Kenya.

Not all actors on the ground, of course, share this emphasis on rural vulnerability. South Africa is a unique case, for example, due to its large cities, relatively low dependence on agriculture, troubled political history, and the economic disparity it shares with its neighbors.<sup>4</sup> A professor at the University of Johannesburg expressed concern that South Africa does not have the resources (specifically water resources) to accommodate the large number of refugees coming from Zimbabwe and other countries. Changing weather patterns logically could exacerbate existing pressures on South African service provision. Xenophobic violence against migrants is another perennial concern for South African authorities, as came to light in discussions concerning the World Cup at a June 2010 United Nations Regional Inter-Agency Standing Committee Office meeting in Pretoria. Such violence raised concerns about South Africa's ability to sustain government service delivery in the run-up to the World Cup and highlighted the country's inability to manage long-term human displacement. As an official at a European bilateral donor office in Pretoria observed, the options of the urban poor are extremely limited, whereas in rural areas people without land or assets still have access to common pool resources.

For different, albeit related, reasons, an official at a Scandinavian country embassy in Tanzania identified coastal urban areas in Tanzania as the country's most vulnerable spots, largely due to the abundance of unplanned settlements. Likewise, both humanitarian and government officials in Uganda warned of massive rural-to-urban migration and a consequent "explosion" in urban population density in cities like Kampala, resulting in high youth unemployment, high food price inflation, and a

proliferation of informal settlements. Fittingly, an official at a European humanitarian agency in Uganda predicted that the focus of vulnerability will soon shift to urban areas. Further north in Kenya, the Famine Early Warning Systems Network (FEWS NET), a USAID-funded network, has a mandate that includes urban food security assessments. The network performs seasonal assessments in northern port cities in Kenya, as well as assessments in other urban areas on an ad hoc basis. FEWS NET representatives in Nairobi noted that upwards of four million people in Kenya are chronically food insecure, and drought in rural areas has systematically caused high levels of rural-to-urban migration. The network initiated its urban assessments, in fact, in response to riots over food prices. That said, the urban focus of FEWS NET is relatively recent, and most of its analytical work still concentrates on rural vulnerability.

These exceptions notwithstanding, the importance of population density may in large part explain discrepancies between CCAPS' findings and views on the ground. Other explanations, however, must also be considered. The second explanation that emerges is a divergence in approaches to understanding drought.

### **Defining and Locating Vulnerability to Drought**

By most accounts, drought is an accepted and significant source of vulnerability to both urban and rural communities in Africa. Drought threatens food security, economic well-being, and political stability, and can cause large-scale population shifts within and across borders. But identifying the vulnerabilities associated with drought is a nuanced exercise, and such nuances may account for differences between how CCAPS and how local actors define, locate, and assess vulnerability to drought.

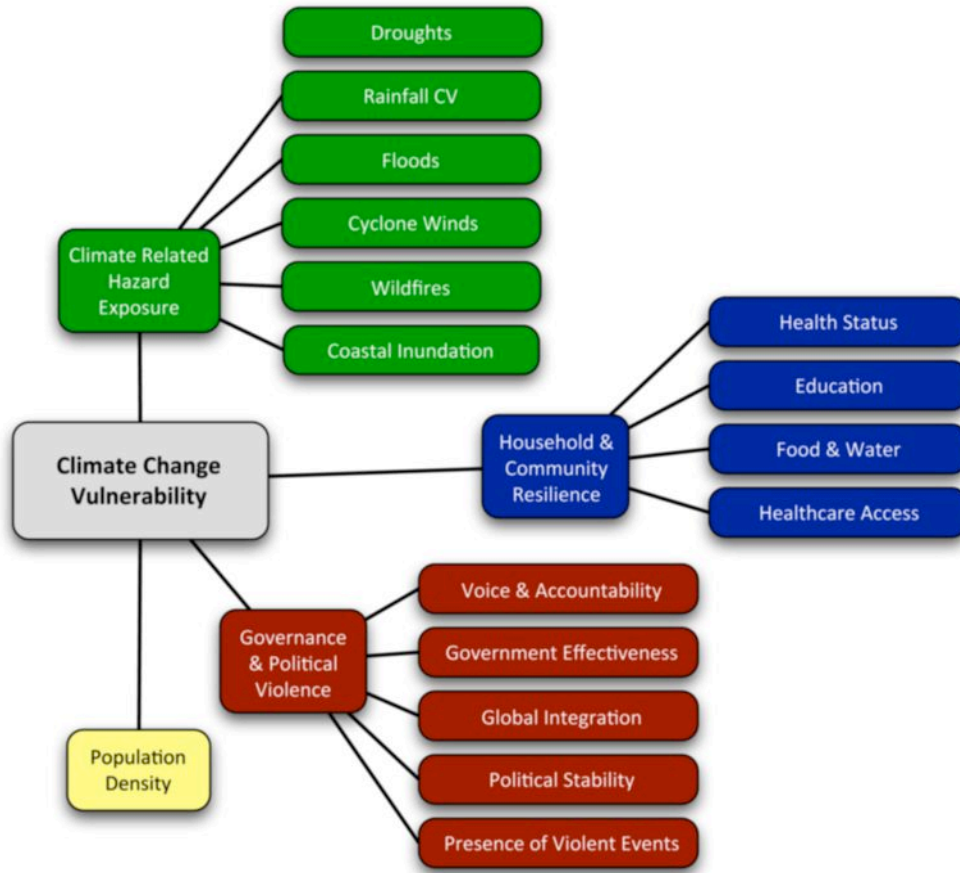
As mentioned previously, the CCAPS vulnerability model incorporates an urban bias in its vulnerability maps. Particularly in places where rural small-scale agriculture largely bears the impact of drought, rural biases may help to explain the perceived impact of drought on vulnerability. But field interviews also exposed differences in how drought can be defined. For example, CCAPS' original indicator of drought measured deviations from normal rainfall based on the Standardized Precipitation Index, in part to capture the impact of changing and unpredictable weather patterns. On the ground, however, many organizations define drought by chronic water scarcity. CCAPS may partially capture chronic water scarcity by including wildfire density data in its composite score of physical exposure to climate-related hazards, if the assumption holds true that higher temperatures and more (or longer) periods of little or no rain increase the incidence of wildfires.

Nonetheless, wildfire density is at best a proxy for chronic water scarcity, and the inclusion of wildfire density as an indicator of vulnerability presents other inconsistencies with ground-level determinations. Addressing vulnerability to wildfires, particularly in relation to climate change, was notably absent from adaptation planning efforts discussed in CCAPS' ground truthing interviews. An NGO official in Nairobi pointed to a project in Mozambique that disbursed fire equipment and trained farmers to manage wildfires. But even this project was not free of controversy. Although a European-funded NGO in Kenya recognized the project as adaptation and provided funding accordingly, the United Nations Development Programme (UNDP) and the Global Environment Facility (GEF) questioned the project's climate change link. To address these concerns, it should be



noted that the CCAPS team incorporated a measure of chronic water scarcity in the next iteration of CCAPS vulnerability maps through the coefficient of variation in rainfall indicator (see Figures 2 and 3).<sup>5</sup>

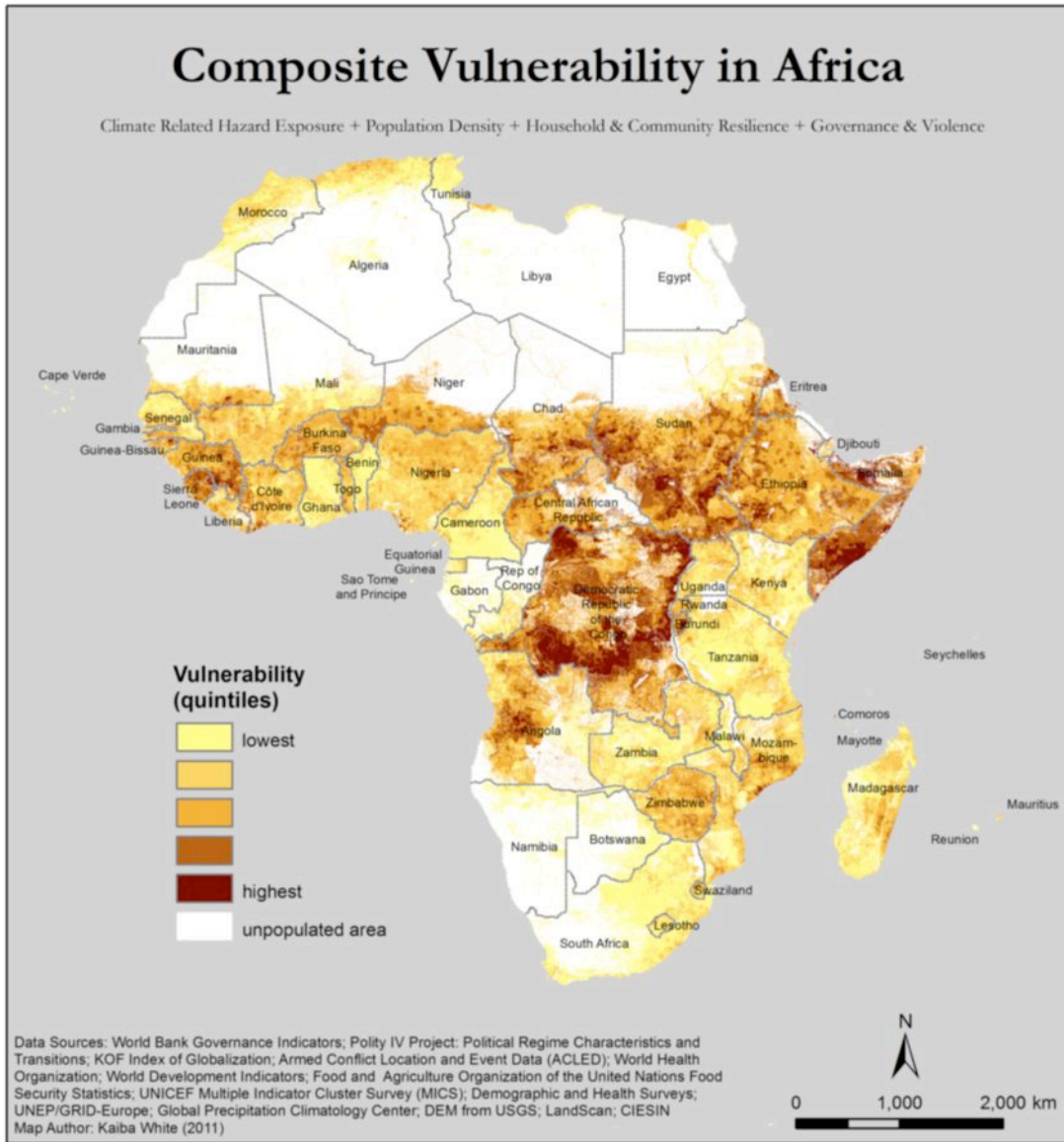
Figure 2. Indicators used in CCAPS model to create geospatial representations of national and sub-national vulnerability in Africa.



### Vulnerability on the Move: Measuring Climate’s Impact on Pastoral Communities

Ground-level actors locate vulnerability largely based on alternative definitions of drought and urban or rural biases. Vulnerability assessments also reflect the lifestyle and economic behavior of the community in question. Pastoral communities face distinct climate-related risks that set them apart from agricultural communities and render pastoral vulnerability particularly difficult to measure. Pastoral communities are generally nomadic, causing their vulnerability to move and thus distorting population density and climate exposure indicators. It follows that pastoral communities may be less likely to take advantage of government services, even when services are available, meaning governance indicators may be misleading. Finally, because pastoral communities rely upon livestock to sustain themselves, the value of their assets is stored differently than actors who store value monetarily or in fixed assets.<sup>6</sup>

Figure 3. The revised map of climate security vulnerability that incorporates a measure of chronic water scarcity.



Several interviewees expressed concerns about the vulnerability of pastoral communities. An officer at a multilateral development bank in Nairobi stressed the fragile livelihoods of pastoralists, first because of their migratory lifestyle, and second because drought uniquely kills off the assets of these communities. Representatives at FEWS NET additionally pointed out that changing grazing patterns lead to conflict between pastoral groups over shrinking grazing lands. In fact, shifts in weather patterns create potential for conflict between pastoralists and agriculturalists.

FEWS NET singled out chronically food insecure pastoral regions in Somalia, including the Mudug and Galguduud Regions. Also at risk are the urban areas into which Somali pastoralists move, such as Lower Juba and the Somali region of Ethiopia. This

phenomenon contributes to the extraordinary challenge of assessing the vulnerability of pastoral communities. As pastoralists become destitute and no longer able to maintain their traditional way of life, they begin to migrate to urban communities and increase pressure on urban services.

The nuances of pastoral vulnerability became apparent as discrepancies emerged between CCAPS' maps and information gathered on the ground in Uganda. As a Ugandan government official pointed out, CCAPS' remote determinations showed little variation of vulnerability throughout Uganda. But a representative of a German-funded water project in Uganda pointed out that there is exceptional vulnerability in Uganda's "cattle corridor," comprised of pastoral drylands stretching from the northeast to the southeast of the country. Many interviewees also expressed concern about the Karamoja region in Uganda's northeast corner, where inhabitants are not settled and must compete with mining concessions for land use. The Uganda case highlights a fourth explanation for deviations between CCAPS' remote findings and assessments on the ground—that of cross-border vulnerability spill-over.

### **Cross-Border Spill-Overs: Should Vulnerability Sharply Change Across Borders?**

CCAPS' vulnerability maps reflect national or sub-national level variables and as a result cannot entirely capture spill-over of vulnerability across national borders. Indeed, it is highly unlikely that vulnerability stops abruptly at, for example, Uganda's borders with the Democratic Republic of the Congo (DRC) or with South Sudan, as shown in CCAPS' geo-representations.

The abrupt change in vulnerability across borders in CCAPS's maps may in part be a function of national governance indicators. If bordering countries have large differences in governance quality at a national level, remotely generated maps may inaccurately suggest sharp local differences in vulnerability across borders. For example, representatives from two Namibian NGOs identified exceptional vulnerability in the north due to proximity to and political instability in Angola. This governance-related vulnerability spill-over is not captured in CCAPS' remotely generated representations.

Still, exceptions notwithstanding, the CCAPS model could in theory capture a portion of border-region vulnerability in its basket of governance and political violence indicators, in the sense that if government is accountable, effective, globally integrated, stable, and free of political violence, then in theory less cross-border migration, and vulnerability associated with migration, should be expected. Nonetheless, several interviewees, including officials at the International Federation of Red Cross and Red Crescent Societies in Nairobi, called attention to vulnerability along Kenya's borders for which the CCAPS maps had not accounted. Officials at the United Nations' Food and Agriculture Organization agreed, arguing that CCAPS' maps should do more to incorporate cross-border issues.

Indeed, given their distance from national capitals, many border regions, such as those areas of northern Kenya that border Ethiopia, South Sudan, and Somalia, as well as Uganda's borders with the DRC and South Sudan, conceivably should share similar vulnerability across borders to the extent that the reach of national governments is limited in these areas.

Combining all of these factors, locating and measuring vulnerability becomes a complex exercise. Urban or rural and agricultural or pastoral biases pervade the development community's interpretations of drought and other sources of vulnerability. At the same time, current or anticipated climate-related migratory patterns are further cause for reflection. For example, to what extent should climate-related risks to rural migratory people be addressed in the urban setting? In seeking to reconcile these differences, CCAPS hopefully can move closer to generating a working definition of vulnerability that allows for accurate evaluation of adaptation aid. Different approaches to adaptation aid is accordingly the next theme of this brief.

## Reconciling Donor and Recipient Approaches to Adaptation: Repackaging, Relabeling, and “Mainstreaming” the Adaptation Agenda

Identifying where and why particular places are vulnerable to climate change will have an important influence on how local actors and international donors prioritize resources for adapting to climate change. Therefore, to understand the evolving trajectory of international development aid in Africa, it is important not only to understand evolving notions of vulnerability but also to examine how definitions of vulnerability will likely affect adaptation efforts. CCAPS’ interviews on the ground found that the understanding of climate change adaptation is evolving as a result of the interplay between donor and recipient interests. Particularly in the initial stages of project design, donors can heavily shape the aid agenda by virtue of controlling aid funds. Adaptation measures are routinely determined by donor preference and may be devised for various reasons, including agrarian security, drought management, protection of pastoral communities, environmental conservation, or institution building. By the same token, in pursuing funds attached to adaptation, aid recipients, including governments and non-governmental organizations, have powerful incentives to embrace donor-defined adaptation values and terminology.

Through donor-recipient interaction, a trend is emerging through which both donors and recipients are endeavoring to “mainstream” adaptation projects into broader development goals. It is not uncommon to see recipients disaggregate adaptation from general development activities to attract earmarked funds, but broaden the scope of adaptation to encompass development objectives during project implementation. Indeed, in some instances, mainstreaming adaptation merely means repackaging or relabeling existing projects.

Representatives at an Irish-supported NGO in Uganda, for example, noted that their organization is primarily interested in poverty alleviation; that said, addressing poverty may help enhance the adaptive capacity of communities. An official with a western donor in Namibia called for integrating climate change in agencies more central to the country’s development trajectory. At the time, the issue was under the aegis of the Ministry for Environment and Tourism, making it a conservation issue, rather than assigned to Finance or Planning, which would make climate change a more central concern for industry and finance. Another official in the country called attention to a conundrum posed by the AIDS agenda, in that AIDS tends to monopolize development aid. The attention and resources that the donor community allocates toward AIDS in this manner typify the challenges of integrating adaptation and development.

### **Donor Definitions of Adaptation**

Interviewees from the donor community shared a desire to increase community consultation in identifying vulnerability and appropriate adaptation strategies. Donors acknowledged, however, that local actors lack full information on climate variability or the necessary funds to autonomously implement full-scale climate adaptation projects. Even in cases that require extensive cooperation between foreign donors and government

ministries, donors finance the studies that determine climate change-related risks, impacts, and associated needs in a given area.

For example, at the time CCAPS conducted its interviews in 2010, the World Bank, the International Finance Corporation, and the African Development Bank were financing Pilot Programs for Climate Resilience (PPCRs) in Kenya, Mozambique, and Zambia. Mozambique alone “has been the subject of a range of innovative analytical studies with regard to climate resilience and adaptation.”<sup>7</sup> As part of Mozambique’s PPCR, organizations ranging from the Danish International Development Agency (DANIDA) to GTZ, the UNDP, the Global Facility for Disaster Reduction and Recovery, the UK Department for International Development (DfID), the Netherlands’ Ministry of Development Cooperation, the Swiss Agency for Development and Cooperation, and the World Bank have together addressed a host of adaptation-related issues, such as disaster risk, the economics of adaptation, water resource management, and transport resilience.

Even accounting for extensive cooperation between donors, ministries, and non-governmental entities, the Mozambique case is a clear demonstration of donor leadership in defining the adaptation agenda. UNDP went so far as to perform institutional analyses of Mozambique’s Ministry of Coordination of Environmental Affairs (MICOA) and Natural Disasters Management Institute (INGC) prior to the proposal’s release. The PPCRs make clear that donors intend for adaptation aid to complement other development activities and thus have structured the programs to “integrate climate risk and resilience into core development planning.”<sup>8</sup>

### **Recipient Definitions of Adaptation**

Aid recipients, too, are by-and-large shifting toward adaptation in development planning. In this process, there can be a tendency among some aid recipients to fit development project proposals within the adaptation rubric. Grant applicants, for example, may repackage environmental conservation or resource management initiatives with adaptation in order to attract funds. Such strategies can both endanger and strengthen adaptation. In one sense, linking aid to broad interpretations of adaptation may distort development strategies and may create incentives for governments and communities to engage in counterproductive activities to procure funds. More positively, financial incentives also encourage more government and civil institutions to incorporate adaptation into their policy agendas, and do so in unconventional ways that increase aid’s effectiveness.

Demonstrating the fine line between the costs and benefits that the mainstreaming agenda poses to conventional development efforts, a development official at a Western embassy in Tanzania noted that the government in Dar es Salaam strategically uses adaptation-based arguments to attract unconditional funds from donors. Some government officials, for example, have attributed salt-water intrusion in the towns of Bagamoyo and Pangani in Tanzania to sea level rise, though one respondent suspects that in Bagamoyo the intrusion is more likely due to water extraction, and in Pangani, to the felling of mangroves and the removal of topsoil. In this official’s opinion, however, claims such as these support strategic aid acquisition. Adaptation funds can be considered seed funds to force decision-makers to prioritize adaptation. As it is, the official predicts it will be 10-20 years before climate change is fully integrated into

sectoral agendas in Tanzania. Indeed, integration of adaptation may progress only gradually at the community level, where in most cases there is only nascent formal understanding of climate change.

More problematically, some interviewees warned of moral hazards associated with financial incentives that might encourage people to enhance their vulnerability and exposure to hazards. A representative from Jomo Kenyatta University in Kenya, for example, pointed to communities in the Ahero flood plains whose behavior during flooding has been predicated upon an expectation of emergency assistance and support for rebuilding in the event of a flood.

Despite the risks, mainstreaming adaptation into development efforts allows policymakers to decouple adaptation from environmental conservation and take heed of the links between climate change, society, economy, and environment. Officials from the City of Cape Town were focused on the broader development implications of climate change adaptation, arguing that while adaptation originally grew as a political tool to drive conservation programs and has since enjoyed a “bandwagon” effect, it is nonetheless inappropriate to seat climate change squarely within environmental policy. Rather, adaptation is a social and economic issue that cannot be extricated from other development goals, one that requires sector-based planning in areas such as water, health, and infrastructure. A more integrative adaptation paradigm allows policymakers to identify and involve key sectors in implementing adaptation programs, and can in fact increase the effectiveness of adaptation aid.

### **Applying the New Adaptation Agenda**

As the mainstreaming agenda has evolved, broad definitions of vulnerability and expansive categorizations of adaptation have invited an array of initiatives that vary widely in creativity and effectiveness.<sup>9</sup> The risk is that without a definitive purpose and comprehensive strategy, aid projects risk uncertainty of objectives, disjointedness, inaccurate impact evaluation, donor fatigue, and failure. The flip side, however, is that a wide range of actors has developed innovative solutions to complex problems at the micro and macro levels in efforts to reduce climate exposure and build institutional capacity.

Adaptation in the current development environment requires new thinking—and rethinking—of development strategy at both the donor and recipient levels. During the course of CCAPS’ ground truthing interviews, interviewees shed light on how people are rethinking scale and location of projects, priorities in inter-state relations, and appropriate institutional capacities.

### **Rethinking Economies of Scale**

As discussed, there is room for debate about locating climate vulnerability and how much weight to attach to population density. Where a donor or project organizer falls in this debate in large part determines where funds are spent. Scaling a program further reflects donor priorities, be they urban or rural, micro or macro. Specifically, donors aiming to affect as many people as possible may not distribute funds to the most vulnerable areas. Rather, donors might choose to target strategic sectors of an economy

that best ensure, for example, food or energy security. Demonstrating this point, a specialist at a Western donor in Kenya noted that an investment in markets in the high production zone in southwest Kenya could have a larger impact on the food security of the country than small projects scattered throughout the country. Taken to its logical conclusion, adaptation priorities could significantly alter the trajectory of economic development in African countries, for example, by encouraging a shift from subsistence agriculture to agro-industrial economies. The urbanizing effects of such a shift also should not be overlooked.

### **Rethinking Inter-State Cooperation**

Rethinking scale and the development values that accompany scale is an essential component of any emerging adaptation framework. More broadly speaking, because vulnerability transcends borders, interstate relations must be evaluated as well. It is no secret that local climate vulnerability cannot be treated in isolation. Migration is just one factor that affects vulnerability across borders. Political instability is another. Borders also impose constraints on resource availability and management, particularly with regard to water. An official at a European donor in Mozambique pointed out that nine rivers in Mozambique originate in other countries. Dam management upstream in Zambia, for example, can cause water shortages downstream in Mozambique during dry seasons and flooding during wet seasons. According to this official, this bilateral donor was actively promoting a more assertive role for Mozambique in negotiating international water management agreements with its neighbors.

### **Rethinking Institutional Needs and Shortcomings**

This particular European donor's water management efforts in Mozambique underscore another donor focus on building capacity in African governmental institutions. Efforts to equip and build the capacity of institutions offer at least four benefits. First, stronger institutions can better coordinate their efforts with donors, NGOs, and other government agencies. Second, as a Kenyan NGO research fellow noted, institutions need supervisory capacity. Small-scale projects are currently difficult to monitor and enforce, creating a typical principal-agent dynamic that encourages conflict between funders and implementers. Third, greater institutional capacity and proper channels of institutional cooperation enable organizations to share and benefit from technology, ideas, and best practices. Fourth, well-managed institutions can limit corruption and misuse of resources.

Donors overwhelmingly recognize existing institutional deficiencies. USAID, for example, is conducting internal assessments of regional institutions in the greater east African region, focusing on institutions that deal with cross-border issues. A Western NGO official in Kenya pointed specifically to a Lake Victoria Basin Commission that examined adaptation efforts in the Mara River basin lying along the Kenya and Tanzania border. Prompted by the Kenya National Climate Change Response Strategy<sup>10</sup> and the Feed the Future initiative,<sup>11</sup> these assessments pose four key questions: How is information being managed? How does information flow between countries and



institutions? How are policies formulated that affect people across boundaries? How do funds flow between institutions and countries?

Governments, as well, are focused on building institutional capacity to respond to climate threats. A government official in Mozambique, for example, while disputing the value CCAPS assigns to governance, noted a skill deficit within his ministry and a consequent dependence on international actors. In many cases, though, institutional capacity is not a matter of knowledge or capability, but rather resources. A meteorologist in Mozambique lamented that available climate projections are based on national-level data collected by external entities. In fact, his organization possesses sub-national data dating back several decades, but none of this data has been digitalized. At the time of the interview, DANIDA had allocated \$60,000 toward digitalizing Mozambique's climate data. Of course, as an academic at the University of Cape Town noted, it is one thing to produce data, it is another to determine what kind of information end users need, and yet another to train end users to use the information once it is available.

### **Attitudinal and Behavioral Barriers to Adaptation**

Shifts toward adaptation in development strategy often encounter behavioral barriers to change at the individual, community, and institutional levels. At the individual and community levels, reactions to drought vulnerability are a prime example of behavioral resistance to adaptation. Drought inspires projects designed to indirectly limit climate exposure by reducing drought's impact. In a number of cases, organizations have promoted the use of drought-resistant crops, such as sweet potatoes, cassava, sorghum, millet, and grain legumes like lentils and peas. Some have pushed agro-forestry, encouraging farmers to plant multi-purpose tree species that are fast-growing and good for fuelwood, shade, nitrogen fixing, and holding soil. But a Western NGO representative in Kenya cautioned that cultivating drought-resistant crops adds a difficult cultural dynamic to adaptation because it means transitioning away from maize, a traditional staple for many people.

Such behavioral challenges are not unique to agricultural communities. A concern for many organizations, particularly in the Horn of Africa, is how to persuade pastoral communities to adopt adaptive behavior. For example, pastoralist resilience to climatic shifts is in large part dependent on keeping animals healthy from diseases like Rift Valley fever. Protecting livestock from disease may require unconventional methods, such as destocking during periods of drought and restocking during recovery. The health of these communities also requires ensuring access to water, but water access, a Red Cross representative pointed out, calls for land planning in traditionally nomadic communities.

At a more day-to-day level, in Mozambique, a local official at a Western environmental NGO drew attention to a fundamental need to alter local hygiene practices in Mozambique as a means of reducing vulnerability. Basic practices, such as filtering drinking water or washing hands before cooking, would improve nutrition, which, in this official's mind, is a necessary, albeit insufficient, step toward more sophisticated adaptation strategies.

Attitudinal barriers to adaptation exist at the institutional level as well. Despite the growing popularity of the mainstreaming agenda, many interviewees pointed out that

climate-related projects still tend to be reactive. In other words, governments and other local actors cope with, rather than adapt to, climate. Consequently, development projects easily become *de facto* adaptation projects, as local actors respond to climate-related events, reprioritize their efforts, and reallocate funds. For example, a government official in Tanzania noted that flooding in the country has at times forced actors to relocate funds in response to damages to railway systems or the spread of disease. To effectively adapt to climate change, institutions must shift attitudinally to proactive adaptation policy approaches that emphasize prevention and risk reduction rather than emergency response.

## Conclusion: Reshaping Incentives to Transform Community Thinking

A government official in Zimbabwe described a commonly held belief that drought is a form of punishment, a belief that significantly weakens community willingness to take preventative measures. Such firmly entrenched behavioral practices are compounded by aid incentive structures that focus on the short-term or fail to tackle the underlying sources that make a community vulnerable in the first place. The expectation of aid by people in Kenya's Ahero flood plains referred to above, for example, should underscore the reality that in the past people (and institutions) have had little material incentive to think comprehensively about adaptation. Perceived short-term costs and benefits have shaped both local and institutional conceptions of vulnerability and thus encouraged or reinforced counterproductive behavior.

The distortion of incentives inherent in short-term thinking is problematic for three reasons. First and most apparently, it weakens communities' ability to accurately identify sources of vulnerability. Second, if communities are not attuned to the long-term sources of vulnerability and the risks and needs associated with climate change, then the expected value of public transparency, participation, and accountability measures built into the aid process is severely diminished. Third, short-term thinking may draw adaptation funds to immediately discernible vulnerability and thus forge false assumptions that aid is best spent where communities are temporarily most vulnerable. In certain cases, aid might be better spent in secure areas with high agricultural output, rather than in vulnerable areas with low output, to ensure reliable food supply for a greater number of people (again, this is a matter of context, scale and evaluation of priorities, but nonetheless merits consideration). More importantly, confronting vulnerability in the long term requires moving beyond temporary coping strategies to address the indirect or socio-economic causes of vulnerability, such as governance, institutional capacity, and education.

Despite any potential shortcomings of integrating adaptation and development, if nothing else, the mainstreaming agenda is reshaping donor-funded development priorities and incentives. Promisingly, there is, at the same time, demonstrable awareness at the implementation level that adaptation requires a corresponding shift in community thinking.

The aid community must face these challenges as it grapples with an emerging adaptation paradigm and undertakes the task of mainstreaming adaptation into traditional development aid. That said, there is still much uncertainty and much that is not known within the donor community itself. This will change over time as technology advances and experience yields lessons in adaptation. The task now is to bridge the knowledge gap—between aid donors and aid recipients, between governments, between government and non-governmental institutions, and between institutions and citizens.<sup>12</sup> Successful partnerships between communities and donors are working to guide adaptation efforts from the bottom up. A European donor official in Tanzania perhaps honed in on a most important point. For community-based adaptation programs to succeed, civil society is essential. A well-functioning civil society acts as educator and as intermediary and communicator between international actors, central governments, and citizens. By

bridging the knowledge gap, perhaps we can move closer toward common definitions of vulnerability and optimal strategies for mainstreaming adaptation into development.

---

<sup>1</sup> For information on the first iteration of CCAPS maps of climate security vulnerability, see Joshua W. Busby, Todd G. Smith, Kaiba White, and Shawn M. Strange. “Locating Climate Insecurity: Where are the Most Vulnerable Places in Africa?” Robert S. Strauss Center for International Security and Law, University of Texas at Austin, 2010.

<sup>2</sup> This paper draws upon interviews conducted in Ethiopia, Kenya, Malawi, Morocco, Mozambique, Namibia, Senegal, South Africa, Tanzania, Uganda, Zambia, and Zimbabwe in June, July, August, and December 2010, and March, June, July and August 2011.

<sup>3</sup> For purposes of this paper, the identities of CCAPS’ interviewees have been kept anonymous.

<sup>4</sup> A representative at a European donor in Pretoria explained that distortions in urban spatial dimensions under apartheid left swaths of people living far from the productive centers of South African cities.

<sup>5</sup> For information on the CCAPS maps of climate security vulnerability that incorporate a measure of chronic water scarcity, see Joshua W. Busby, Todd G. Smith, and Kaiba White. “Locating Climate Insecurity: Where are the Most Vulnerable Places in Africa?” *Policy Brief No. 3*, Robert S. Strauss Center for International Security and Law, University of Texas at Austin, 2010. The map of sub-national climate security vulnerability of Africa presented in *Policy Brief No. 3* updates an earlier version of this model from fall 2010 by including several new data sources and indicators including: 1) a new data source on droughts; 2) a new indicator for areas with chronic low rainfall; 3) a new sub-national indicator of access to improved water sources; 4) a new indicator for sub-national violence; 5) revised metrics of government effectiveness and voice and accountability which reflect a 3-year weighted average; and 6) an alternate, more fine-grained indicator of population density.

<sup>6</sup> Though the CCAPS vulnerability model does not include income, it includes a number of measures in its household basket on health and education that are highly correlated with income and for which subnational data are available. Additional information on assets might be desirable but might be hard to obtain and be highly variable between rural and urban areas.

<sup>7</sup> See *Preparation of a Strategic Program for Climate Resilience (SPCR) – Mozambique: Proposal for Phase 1 Funding*, June 7, 2010, pages 14-15.

<sup>8</sup> For a full description of the PPCR and supporting documents, see the Climate Investment Funds webpage at [www.climateinvestmentfunds.org/cif/Pilot\\_Programs](http://www.climateinvestmentfunds.org/cif/Pilot_Programs).

<sup>9</sup> See Catherine Weaver and Christian Peratsakis, “International Development Assistance for Climate Change Adaptation in Africa: The Aid Scramble,” *Policy Brief No. 1*, Robert S. Strauss Center for International Security and Law, University of Texas at Austin, 2010, for a more detailed discussion on the multitude of understandings and categorizations of climate aid. Brief available here: [http://ccaps.strausscenter.org/system/research\\_items/pdfs/35/original.pdf?1286823400](http://ccaps.strausscenter.org/system/research_items/pdfs/35/original.pdf?1286823400).

<sup>10</sup> For more information regarding the Kenya National Climate Change Response Strategy, see <http://preventionweb.net/go/15678>.

<sup>11</sup> For more information regarding the Feed the Future initiative, see [www.feedthefuture.gov](http://www.feedthefuture.gov).

<sup>12</sup> One example of bridging the knowledge gap is the partnership of the CCAPS program, the Ministry of Finance of Malawi, Development Gateway, and AidData to map adaptation aid in Malawi. Geocoding adaptation aid will help Malawi and its aid donors to coordinate their efforts, inform the public of their activities, and better assess how well adaptation projects target the particular climate vulnerabilities of the country.