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Research Report

Local government engagement with climate change adaptation in Uganda

DIIS Report, No. 2015:19

Provided in Cooperation with:

Danish Institute for International Studies (DIIS), Copenhagen

Suggested Citation: Friis-Hansen, Esbern; Aben, Charles; Okiror, John James; Bashaasha, Bernard; Suubi, Godfrey (2015) : Local government engagement with climate change adaptation in Uganda, DIIS Report, No. 2015:19, ISBN 978-87-7605-778-7, Danish Institute for International Studies (DIIS), Copenhagen

This Version is available at:

<https://hdl.handle.net/10419/144735>

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A person is walking away from the camera on a wet, muddy street during a heavy rain. They are holding a large red and white striped umbrella over their head. In their left arm, they are carrying a stack of several closed umbrellas in various colors, including green, red, and black. They are wearing a bright yellow t-shirt with some text on the back, dark pants, and brown shoes. The ground is very muddy and reflective from the rain. The background is blurred, showing more of the wet street and some distant structures.

LOCAL GOVERNMENT ENGAGEMENT WITH CLIMATE CHANGE ADAPTATION IN UGANDA

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Layout: Lone Ravnkilde & Viki Rachlitz
 Printed in Denmark by Eurographic Danmark

ISBN 978-87-7605-779-4 (print)
 ISBN 978-87-7605-778-7 (pdf)

DIIS publications can be downloaded free of charge or ordered from www.diis.dk

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INTRODUCTION

INSTITUTIONAL AND POLITICAL CONTEXT OF CLIMATE CHANGE ADAPTATION IN RURAL UGANDA

The U.N.'s panel on climate science latest report states: "Climate change is happening, it's almost entirely man's fault and limiting its impacts may require reducing greenhouse gas emissions to zero this century". U.N. Secretary-General Ban Ki-moon said at the report's launch: "Science has spoken. There is no ambiguity in their message. Leaders must act. Time is not on our side" (IPCC 2014).

Climate science concludes that East Africa has suffered frequent episodes of both excessive and deficient rainfall in recent years. Regarding Uganda specifically, Shongwe (2010) reports that the frequency of both anomalously strong rainfall, causing floods, and of droughts have increased over the past two decades.

The fact that extreme floods and drought have become much more frequent over the past decade is confirmed by qualitative interviews undertaken by a CCRI research program involving the rural population of Teso Region, Uganda. Following the 2012 floods, a farmer from Magoro sub-district, Katakwi District, said, "We are trapped between floods and droughts and organize in groups to find ways out, but we are not getting the support we need from government to succeed". As elsewhere in rural Africa, it is the poor, women and other marginalized groups with little or no mechanization, irrigation or use of seasonal chemical inputs who are particularly vulnerable to climate change hazards (Friis-Hansen, Bashaasha and Aben, 2013).

While both science and rural populations' perceptions of climate change are clear, considerable ambiguity remains among politicians and technical staff in Uganda at both the national and local government levels with regard to what climate change is, what can and should be done, who should do what and who should finance adaptation activities. This report explores perceptions of climate change among local government staff and farmers and seeks to take our understanding further by analysing climate change through a political ecology lens and using the recent floods in Teso Region as an example.

Much of this ambiguity is linked to inadequate coherence between climate change policy and practice. Local government institutions are uniquely situated to mediate between national policies and global agendas concerning climate change on the one hand and demands and challenges articulated by rural communities on the other. Local governments are the most appropriate level for implementing national

climate change adaptation and mitigation policies, yet their contribution is not fully appreciated. These meso-level institutions are closer to the people and provide a natural interface between national policy frameworks and community programs and civil-society initiatives to address climate change issues. While the new National Climate Change Policy (MWE, 2012) represents a major step forward compared with NAPA (GoU, 2006), the proposed institutional framework remains inadequate. The report analyses the evolution of climate change policy in Uganda and uses the principle of subsidiarity to understand the appropriateness of the proposed implementation strategy.

Recognizing the importance of political support for the outcome of climate change action, the report examines the extent to which climate change adaptation is on the political agenda of local government bodies and in what ways. A case study from Amuria provides a deeper examination of how events that lead climate change can become a contested issue during local government elections.

Meso-level rural institutions are increasingly playing a key role in formulating and implementing support for climate change adaptation. The study explores the nature and extent of engagement of and interactions between meso-level rural institutions in this providing this support. By means of four district case studies, the report reveals a wide spectrum of context-specific institutional changes.

AIMS AND METHODOLOGY OF THE CCRI RESEARCH PROGRAM

This DIIS Report will present selected findings from the results of the CCRI's research in Uganda. Climate Change and Rural Institutions (CCRI) is a joint collaborative research project (2012-2015) between the Danish Institute for International Studies (DIIS) and the Department of Agribusiness and Natural Resource Economics at Makerere University (Uganda), the IWRM Centre at the University of Zambia (Zambia), the Centre for Climate Change Studies at the Hué University of Agriculture and Forestry (Vietnam) and Forest Action (Nepal) with support from the Danish International Development Agency (DANIDA).

The CCRI Uganda research team consists of three senior researchers, a PhD student and four research assistants. Qualitative interview results from key stakeholders and oral presentations during the CCRI district inception workshops and a joint CCRI/NAADS regional climate change adaptation workshop were recorded, transcribed and analysed using Nvivo software.

The overall objective of the CCRI research program is to improve adaptation to climate change in rural areas through the development of policies to stimulate innovation among meso-level institutional actors. The research addresses the knowledge gap that currently exists regarding the role of district-level institutions in providing an enabling environment for climate change adaptation by rural citizens. These meso-level (district) institutions play a key role at the interface between national policies and individual/community-level adaptation efforts. The research program therefore explores (i) the nature and extent of their involvement and interactions in climate change adaptation, and (ii) the factors and processes that stimulate, constrain or block innovation in relation to climate change adaptation.

The CCRI research program uses a qualitative fieldwork methodology that analyses case studies within their past and present political, economic and environmental contexts at the national and district levels. The foci of the case studies have been governance and institutions, including the historical development of national policies related to different aspects of decentralisation and the role of meso-level institutions, and their impact on the organisational cultures, cooperation and room for manoeuvre within these organisations.

Four districts were selected in Uganda. These included Soroti, Katakwi and Amuria, which had been severely affected by the heavy rains and floods in 2007. In addition, Mbale District was selected to review an earlier project on climate change adaptation implemented by the UNDP with local government institutions. However, the Territorial Adaptation to Climate Change project (TACC), implemented by the UNDP, covered Mbale, Manafwa and Bududa Districts. Initially, four case studies were commissioned in Amuria, Katakwi, Mbale and Soroti Districts in order to provide the basis for an evidence-based analysis, in which conclusions could be drawn about which factors are unique and related to the very specific context only, as well as allowing generalized conclusions about how institutions may or may not change in response to climate-related upheaval.

The study area in Uganda that consisted of Soroti, Amuria and Katakwi Districts are associated with the wider Teso farming system and associated morphology (highlands, lowlands and wetlands) that covers around eight districts. Soroti, Amuria and Katakwi Districts are located in Teso region in eastern Uganda. Prior to 2010, Soroti District included the current Soroti, Amuria and Serere Districts. It borders Kamuli, Lake Kyoga, Kumi and Pallisa in the south, Lira in the north-west and Katakwi in the north-east. Its total area is 4,946 km² with a land area of 3,786 km², water and

Figure 1. Map of Uganda



Field work was carried out in three districts around Soroti.

rock cover about 1000 km² and the remainder being made up of forest cover. Its landscape is characterized by gently rolling plains, with isolated rocks. The land slopes gently upwards towards Lake Kyoga basin in the south. The landscape lies between 1033 and 1363 meter above sea level. The flat terrain is traversed by numerous swamps and wide U-shaped valleys occupied by wetlands. The wetlands lie between 1036 and 1158 meter in altitude and are located within most of the district (3,206 km²). The soils are of sandy sediments and sandy loams, well drained and highly friable. Bottomlands, where the wetlands lie, consist of clay soils with alluvium deposits.

The major drainage basin for wetlands in three districts is the Lake Kyoga basin. The main systems that can be identified are the Lake Kyoga wetlands, located directly along the shores of the lake; the Kapujan-Awoja wetlands, located along the border with Katakwi and Kumi Districts; the Abalang wetlands, located at the border with Lira District; the Ojago wetlands, located throughout Arapai, Katine and Kamuda sub-counties adjacent to Lake Kyoga; and the Olianai wetlands. The wetlands play a crucial role in the water cycle and ground water recharge and discharge. The Awoja wetlands are an important source of water for Soroti town. The wetlands are the home of a wide diversity of flora and fauna, including papyrus, grasses, birds and fish.

The methodology entailed a document review of the existing policy frameworks for climate change adaptation at the national level in 2013. This was followed by a regional stakeholder workshop held in Soroti in 2014, which brought together nine local governments, private-sector actors and NGOs in Teso sub-region. In 2014 in-depth qualitative case studies were initiated in each of the four districts focusing on the role of local government institutions engaged in climate change adaptation. These were followed up with a second set of case studies on emerging themes such as the climate-induced cross-border mobility of marginal communities in Karamoja and Teso, the inter-district governance of co-created climate change hazards, the role of the private sector in communities' coping strategies for climate change, and the effects of climate change adaptation on local politics.





**UNDERSTANDINGS OF
CLIMATE CHANGE IN UGANDA**

NATURAL SCIENCE ASSESSMENTS OF CLIMATE CHANGE

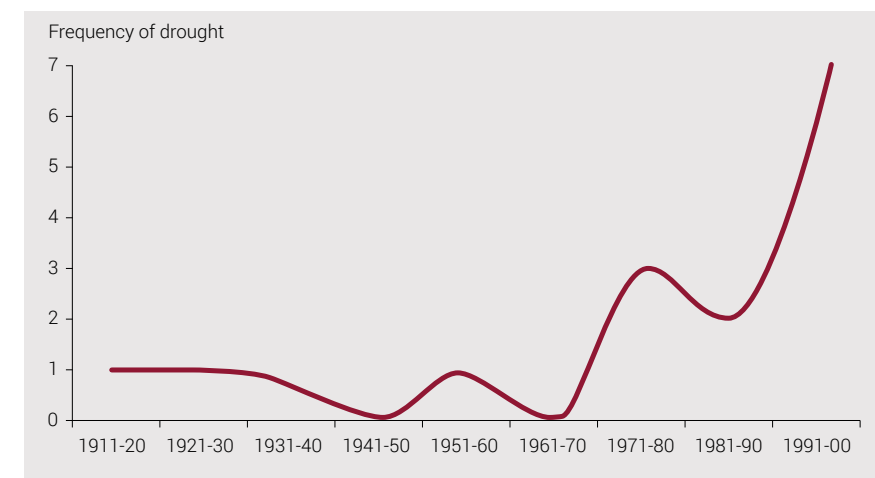
Historic rainfall data show that, “while inter-annual rainfall variability is high...there is no clear, climate change-related trend in rainfall” (USAID 2013: 30). In other words, total annual rainfall over a sixty-year period is neither falling nor increasing. What is increasing, however, is the variability of rainfall within each year.

Climate scientists find that there is “a potential for increase in the frequency of extreme events as hydrological cycles intensify in a warming atmosphere” (USAID 2013: 31). This report further states that the timing of rainfall can vary considerably; the onset of rainy seasons may shift by fifteen to thirty days either way, while the length of the rainy season may change by twenty to forty days from year to year (USAID 2013: 6). The same study also projects an increase in rainfall in December, January and February, which is typically a dry season. Lyon and DeWitt (2012) identified a decline in March to May rainfall at the regional scale, this having persisted since 1999 and being linked to an unprecedentedly anomalous sea-surface temperature pattern in the Pacific Ocean. In layman terms, that is, the onset and length of the rainy season has become more unreliable, the amount of rainfall during the March to May rainy season is falling, and it now also rains irregularly during the dry season.

Droughts. The Western, Northern, and North-Eastern regions have been experiencing more frequent and longer-lasting droughts than have been seen historically (GoU, 2007). Between 1991 and 2000 there were seven droughts in the Karamoja region, and the years 2001, 2002, 2005 and 2008 also saw major droughts (GoU, 2007; EM-DAT, 2011). While there have always been droughts in Uganda, evidence suggests they are becoming more frequent and more severe (IGAD, 2010).

An example of such a severe drought was the widespread drought of 2000 in the Eastern and Northern regions, with Arua District being worst affected, although the Western region experienced good seasons. The increased frequency and duration of droughts is the most significant climate-related change being experienced in Uganda (GoU, 2007; MWE, 2010). See Figure 2.

Figure 2. Drought occurrences in Uganda 1911-2000



Source: GoU 2007

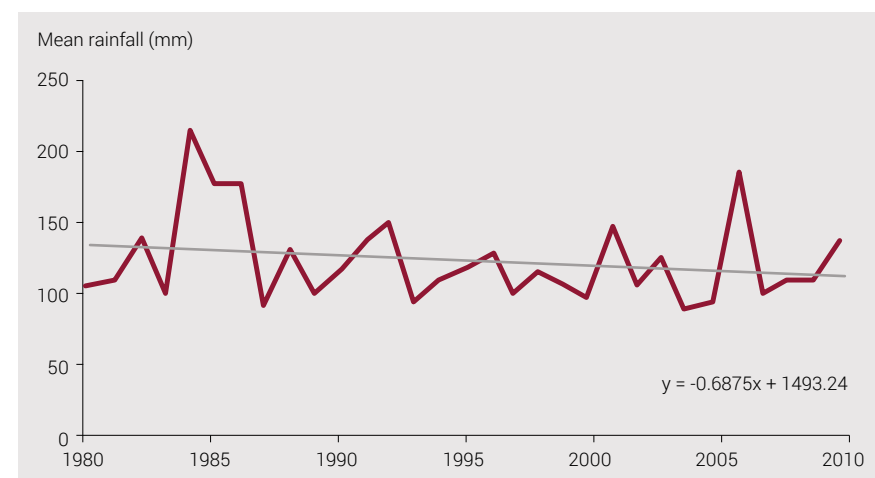
Since 2000, extreme rainfall conditions have been regularly experienced in eastern Uganda, where there has been an increase of approximately 1500 mm in precipitation in the December to January rainy season (NEMA, 2008). Teso Region has particularly been affected by these trends.

Floods. Since 2004, the Teso sub-region in the north-eastern part of the country has experienced a series of major floods, which have been followed intermittently by long droughts. This has virtually derailed planting strategies in the sub-region. The most serious flood in Teso was in 2007. In September 2010, another flood hit the Teso region, rotting cassava, sweet potato tubers and groundnuts (GoU 2012: 13). Another serious but localized flood occurred in 2012 in Magoro sub-county.

Gradual increase in variability of rainfall. According to the Uganda Department of Meteorology, rainfall seasons have become more variable, as shown by the analysis of cumulative average ten-day totals. Although western, central and northern Uganda experienced good rainfall, the eastern region experienced droughts in 1997, which illustrates the complexity of these variations.

The 'normal' weather pattern used to consist of two district rainy seasons. The first season ran from March to June, with a dry spell in July. A second rainy season ran from August to November, with a dry spell from December to February. Analysis of long-term precipitation data indicate that total annual rainfall in Teso Region has increased, though the onset and cessation of rains have become less certain. As a result, rainfall during the first rainy season has become unpredictable. When it does rain, however, the rainfall is more intense and 'violent' (Bashaasha et al., 2011).

Figure 3. Trend of rainfall data for Soroti District in Uganda between 1980 and 2010



Source: Epilo 2011.

Figure 3 shows a downwards trend in annual rainfall. Average annual precipitation in Soroti during the decade 1990-1999 was 1443 mm, compared with 1283 mm in the decade 2000-2009. Only one year during the 1990s received less rain than the decade following 2000. Only one year in the 2000s received more rainfall than the average during the 1990s.

Analyses of the underlying data for Table 2 (Annex 1) reveal that there is no trend with regard to variation in monthly mean precipitation within the twenty-year period. However, one cannot conclude that the variation has not increased over the past two decades based on these data. Such a conclusion would require analysis of daily rainfall data that has not been accessible to the CCRI team.

LOCAL GOVERNMENT STAFF'S AND LOCAL FARMERS' PERCEPTIONS OF CLIMATE CHANGE

When did local government staff first acknowledge the existence of climate change? The memory of timelines regarding extreme climate events is rather obscure among stakeholders in the study area. Stakeholders refer to 1971 as the start of the government's commitment in addressing climate change, when changes in seasons and flooding events become very frequent. Another year that people recall is 1997 when the global weather phenomenon El Niño occurred, which in Teso was associated with floods which hit these districts for the first time in living memory. In 1979 and 1980 Teso Region experienced severe famines that were in part caused by unusually long droughts, though these climate events are primarily perceived to be associated with the war of liberation that took place during this period.

However, it was only with the floods in 2007 and subsequent prolonged drought that the idea of permanent climate change, as opposed to mere climate variation, took root among the local population in Soroti. The severity of these floods is perceived as have been more severe than any other event in living memory. The actual concept of climate change was first introduced in Soroti District by Makerere University researchers in 2007.

Peoples' perceptions of the severity of extreme climate change events. During 2012, the CCRI research program held three workshops in the Soroti, Amuria and Katakwi Districts with professional local government staff, local government politicians and farmer leaders and representatives. During group work, mixed groups of stakeholders sought to identify how, in their views, climate change had impacted on these districts in the past and the key changes that have therefore been caused to the environment and farming system.

The discussions that took place in the three workshops revealed a high level of ambiguity and uncertainty about climate change hazards. However, the participants agreed that the intra-seasonal variability of rainfall has increased. This perception was articulated and explained in two ways. First, the frequency of extreme climate change events, such as drought and floods, was felt to be increasing. Secondly, it was claimed that gradual climate change is making the traditional agricultural

seasons less reliable, as reflected in statements such as “rainfall has become more unpredictable” and “the long and short rainy seasons have swapped places”. In the next section we will see that both these popular perceptions of climate change are collaborated by natural science studies.

There is increasing awareness on the part of the district local governments of issues of climate change, as the highly articulate discussions during the workshops demonstrated. This growing awareness is in part attributed to the influence of international NGOs and academic institutions and in part to the experience of pressure from rural residents.

Table 1 below lists the assessments of the key climate change hazards and upheavals facing the three study districts based on CCRI fieldwork 2012.

Table 1. Perceptions of the most important climatic hazards in three study districts

PERCEIVED CLIMATIC HAZARD	SOROTI	AMURIA	KATAKWI
Severe floods	Yes	Yes	Yes
Prolonged drought	Yes	Yes	Yes
Extreme temperatures	Yes	Yes	Yes
High frequency of lightning	Yes	Yes	Yes
High intensity of rain	Yes	Hail storm	Flash floods

Table 1 summarizes the perceptions of participants in three district workshops where groups were asked to prioritize the five most severe extreme climate change events. The table indicates a high level of agreement between the groups.

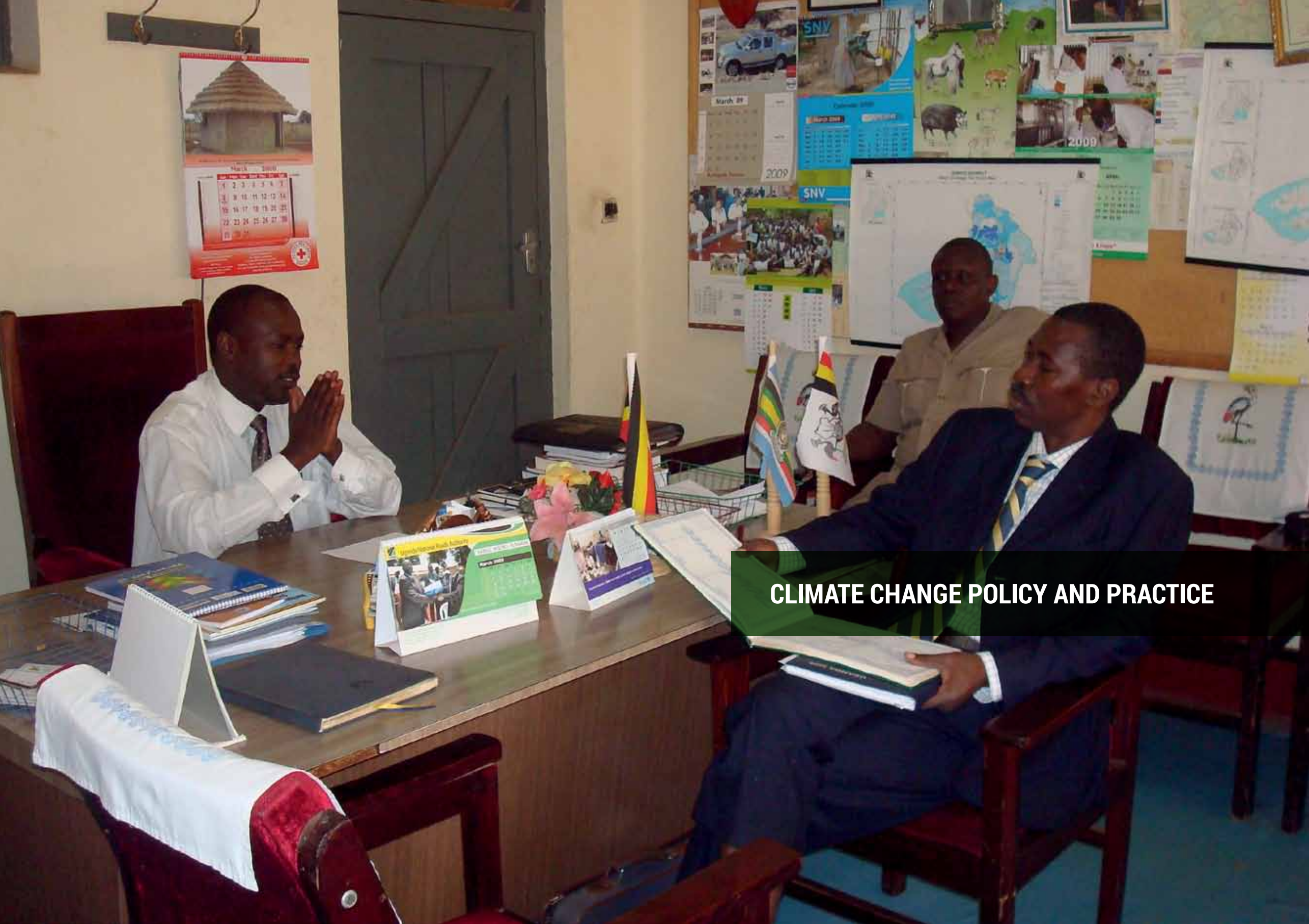
Table 2 below lists the perceptions of the local government staff and farmers who were interviewed concerning features of gradual climate change.

Table 2. Key features of gradual climate change in the study districts

KEY FEATURES REPORTED	SOROTI	AMURIA	KATAKWI
Change in weather patterns	Yes	Yes	Yes
Degradation of wetlands	Yes	Yes	Yes
Increased pest infestations and diseases	Yes	Yes	Yes
Depletion of tree cover	Yes	Yes	Yes
Changes in land-use patterns	Yes	Yes	Yes
Reduced biomass and size of pastures	Yes	Yes	Yes
Reduction in fallow periods	Yes	Yes	Yes
Loss of biodiversity	Yes	Yes	Yes

The most important feature of gradual climate change in the three study districts mentioned by stakeholders is changes in weather patterns. The indicators are the increased unpredictability of both the onset and end of the season; unusually large amounts of rainfall occurring over shorter periods of time, followed by dry spells; and a shift in importance of rainy season. Now the second rainy seasons appears to have become more reliable than the first, with an increased incidence of ‘freak rainfall’ during the dry season.

One effect of this perceived change in weather patterns are the increased uncertainties among farmers about when to plant. This has come to be associated with a higher risk of planting crops after the first sustained rains, as this is no longer a certain sign that the first rainy season has started. Unpredictable rains have resulted in later planting and therefore reduced crop yields. Farmers have also noted changes in plant phenology, particularly in the flowering seasons of mangoes and other tree crops due to changing climatic conditions.



CLIMATE CHANGE POLICY AND PRACTICE

This section first analyses the national policy response and characterizes the new climate change policy arena as compared with the more established disaster and emergency response policies. Thereafter the institutional landscape involved with climate change is mapped. This is followed by an assessment of the relationship between national policy and local government practice by introducing the principle of subsidiarity. Finally, we discuss how climate change is articulated or ignored among local government politicians, exemplified by a case study from Amuria District, where climate change was successfully used as a platform for local government elections in 2006.

EVOLUTION OF A NATIONAL CLIMATE CHANGE POLICY

In 2007 a National Adaptation Program of Action (NAPA) was issued by the Department of Meteorology in the Ministry of Water, Lands and Environment (MoWE). The formulation of NAPA was carried out by central ministries, with the aim of making Uganda eligible to receive funding from the Least Developed Country Fund (LDCF). Policy formulation involved little consultation with stakeholders outside the central ministries. The National Adaptation Plan of Action (NAPA) developed nine proposed project areas to address climate-related hazards and disasters that were all formulated by central ministries. As a consequence, central ministerially managed projects became the chosen implementation modality of NAPA, thereby ignoring the Decentralization Act and the existence of local government structures (MWE 2006).

The National Climate Change Policy was formulated during 2012. The process of formulating a new National Climate Change Policy has been driven by a newly established Climate Change Unit (CCU) located within MWE and financially supported by international development agencies, including the EU, DFID, DANIDA, the World Bank and the World Food Program (WFP).

The National Climate Change Policy has coordination mechanisms at the national and local government levels. Nationally each of the numerous ministries, departments and agencies with a role to play in the implementation of the policy responses outlined in this document will designate a departmental focal point and will be accountable for the implementation of the prescribed policy responses that concern them. An Implementation Strategy details the accountabilities of the various ministries, departments and agencies.

At the local government level, the focal point is anchored within the Natural Resources Department that is tasked with ensuring that climate change issues within all departments are integrated into District Development Plans. The existing District Environment Committee is expected to act as a mechanism to ensure cross-sectoral coordination. The decision to empower the District Environmental Committee to coordinate and mainstream climate change activities for all other local government departments reflects the fact that MWE formulated the policy. The reality at district level, however, is that the environmental department is relatively weak and has little power to coordinate or mainstream activities.

SUBSIDIARITY ASSESSMENT OF THE GOVERNANCE OF CLIMATE CHANGE ADAPTATION

Within the context of nation states, the principle of subsidiarity tells us that the functions of government should be allocated to the levels that are most competent to handle them.

In the case of climate change adaptation, the appropriate level of governance is necessarily local, as the vulnerabilities caused by climate change hazards are highly context-specific, and the process of adapting is highly discretionary in nature and likely to vary over time. On the other hand, the level of governance cannot be too local. Experience of autonomous adaptation clearly shows that, while farmers have a long tradition of adapting natural resource management practices to changing weather conditions, they are unable to cope with the magnitude of changes associated with climate change without collective action and outside assistance.

Uganda undertook a comprehensive decentralization reform in 1993 and has since built up government units at the district and sub-county levels, with elected councillors and technical and administrative staff providing a range of services. Since 2000 a second wave of reforms aimed at deepening democracy has been implemented, leading to the establishment of new local institutions that link users of the primary service units to local government institute Agrawal 2010. Local government bodies in Uganda are well-placed political institutions that are capable of examining and discussing climate change hazards and creating an enabling environment that allows rural citizens to adapt.

A closer look at the proposed budget in the costed implementation framework for the NCCP reveals that the entire proposed budget of 3.9 billion USD over a fifteen-year period is shared among the central ministries (Costed Implementation Strategy for NCCP, MWE 2012). While the NCCP embraced the local government system as the key implementation modality, the implementation plan does not include a mechanism for the transfer of funds for local government climate change activities.

To conclude, the implementation strategy for the NCCP has created an imbalance between national and local government over the location of decision-making and fiscal and administrative resources. Power and finance are centralized, while the administrative capacity to address climate challenges is located at the local government level. This is inconsistent with the principle of subsidiarity. Such an implementation strategy, where the central ministry creates projects and controls finance, while districts are reduced to becoming implementing partners, is not likely to provide a cost-effective environment for rural climate change adaptation.

CLIMATE CHANGE ON THE DISTRICT COUNCIL'S POLITICAL AGENDA

Climate change adaptation is intrinsically a political process, as adaptation is closely linked to questions of power and natural resource management. In particular for climate change-induced emergencies, it is important that politicians at both the national and local government levels be seen to respond. This section analyses the political aspects of climate change in Uganda.

Disasters induced by extreme climate change events such as extreme floods or droughts, combined with a general increased variability in agricultural seasons, have exerted enormous pressure on the rural population of Uganda. The question is to what extent this pressure is being translated into political pressure over governance structures that are closest to the local people, and how. In spite of the elaborate decentralization structure and regular elections of local government councillors, climate change is rarely discussed politically by the latter in Uganda.

Today (2015), three years into implementation of the NCCP, central government funding for climate change adaptation is still absent from all the District Development Plans in Teso Region. As a consequence of the absence of a budget line for climate change adaptation, local government politicians have by and large remained

inactive. Even though local government politicians sometimes becomes under pressure to act when they engage with their constituencies, the general trend is that, without a budget line, climate change adaptation is not on the district council's political agenda. "No funding, no activities", as one local government politician put it.

In addition to the absence of a budget line, qualitative interviews with local government politicians and technical staff suggest that the climate change challenge is perceived as complex and difficult to solve (Friis-Hansen, Bashaasha, Chelli and Aben 2013). Climate change adaptation is surrounded by considerable ambiguity, and for local government politicians it is an issue they find difficult to articulate in a manner that generates popular votes within their constituency. To sum up, climate change adaptation is regarded by local government politicians as a 'lose-lose' issue (no funding and no votes).

Further adding to the ambiguity, the content of local government climate change activities is widely dictated by outside donors, such as central government or NGOs. The content of activities is therefore often the outcome of a top-down global agenda, rather than the results of a participatory planning process and political struggles in the district council. Efforts to mitigate climate change and support for local communities to adapt to the effects of climate change can sometimes be combined, but most often they require different types of emphasis and activities. Mitigation and adaptation are often confused and are not adequately separated by civil servants at the local government level or the wider public. There exists a general bias in international funding and science towards mitigation of climate change, commonly expressed in the practice of planting trees, while ambiguity exists among actors at the local government level regarding how best to support rural communities in introducing adaptation to climate change hazards.

Moreover, the effectiveness and impact of climate change adaptation plans is affected by to whom the implementing civil servants are accountable, that is, upwardly accountable to external donors and/or national government, or downwardly accountable to informed and organized local rural communities. Central government has a social contract to respond to large-scale natural disasters, in particular when they are widely exposed in the media. However, when it comes to 'everyday' climate change hazards that have significant impacts on the rural population, local and national governments' responses have until now been limited in Uganda.

CASE STUDY OF CLIMATE CHANGE AS A PLATFORM FOR ELECTIONS AND POLITICAL ACTION IN AMURIA DISTRICT

Climate change became an important political issue in Amuria District during the 2006 elections. The major contest to become chairman of the district council was fought between the incumbent chairman from the opposition and the existing chairman from the NRM. The incumbent chairman had moved from Katakwi District (the mother district from which Amuria was created) to Amuria “out of frustration over the low service level and accountability of local government towards rural people”.¹ In 2006, he managed to campaign effectively on platforms that criticized the service level of local government in general and the lack of a response from central and local government to food insecurity and upheavals caused by climate stress in particular.

During the election campaign, the challenger candidate toured all the sub-counties and many villages, where he successfully articulated the environmental hazards to which most of the rural population were vulnerable, along with the structural, social and historical causes to poverty. By criticizing how existing district councils had ignored environmental and climate change issues and the very low level of social support, as well as promising that he would address these issues if he were elected, he managed to gain the popular vote. While stressing the importance of environmental and climate change issues in the local government elections in Amuria District is likely to be a unique case, it does show that it is possible to attach votes by addressing climate change. By engaging in an electoral process that seeks to put words to the unsustainable use of the natural environment and the hazards associated with flooding, the politician managed to place climate change on the political agenda in such a way that it generated widespread support among the majority of rural voters while simultaneously disproving the lose-lose perception that is dominant among most local government politicians.

Two incidents during the year following the 2006 elections reinforced the elected chairman's focus on addressing climate change politically in the district council. First, almost immediately after the elections, along with most of Teso Region, Amuria District was affected by the worst floods in memory. Secondly, central government sought to suppress the newly elected LC5 chairman's criticisms politically.

¹ Interview with Mr Julius Ocen, Chairman of Amuria District Council 2007-2011.

One of his first actions as chairman was to establish a verification commission to investigate the causes of poverty in Amuria District. In the midst of the 2007, floods the commission visited all the sub-counties of Amuria District and collected people's statements on the root causes of vulnerability in Amuria. The commission produced a report that documented in detail the causes of poverty and the low level of services in Amuria District. The report underpinned the linkage between the recent wars (fought between central government and rebels, as well as cattle-rustling) and vulnerability of these communities. The report also highlighted the poor management of natural resources as its major focus and showed how the grazing of local cattle in the wetlands was being undermined by government support for the expansion of rice cultivation.

Due to what was perceived to be the sensitive nature of the report, the District Security Officer under the Resident District Commissioner (the representative of central government) prohibited the launching of the report and blocked its publication. This reaction was in part because the Minister for Disasters at the time, who had been born in Amuria District, felt the political process of handling climate disaster issues in the district was undermining his role as the minister responsible for disasters. The chairman of the district council reacted to the suppression of his report by inviting the national newspapers and television producers from Kampala to Amuria and holding a dramatic press conference in which he used the findings of the report to illustrate the effects of floods caused by climate change and publicly criticized the government's inaction, and in particular the Minister for Disaster for his failure to address the plight of the victims of the floods.

Internally within the district, the commission and the political turbulence it created enhanced the chairman's focus on natural resource management, the environment and the role that wetlands play as a buffer against the floods, and therefore its direct links with vulnerability in Amuria. The major outcome of this political focus was that district council requested the environmental officer to develop an environmental ordinance.² This ordinance was passed by the district council and later confirmed by the attorney general, making it a law. The environmental ordinance called for the protection of wetlands and the development of wetland management plans. In addition the environmental ordinance prohibited the cutting of endangered tree species (shea nuts, tamarind species) that were widely used in charcoal burning.

² Amuria District 2010, Environmental Ordinance.



**POLITICAL ECOLOGY OF CLIMATE CHANGE
ADAPTATION IN UGANDA**

INTRODUCTION TO POLITICAL ECOLOGY OF CLIMATE CHANGE

In the following we introduce political ecology as an analytical lens for climate change adaptation. This will be followed by a section that uses political ecology to analyse the Teso floods in Uganda.

Political ecology allows us to understand the effects of policies and market conditions from local people's perspectives. Moreover, it is helpful in understanding the political forces at work in the struggle for land-based resources and coping strategies at the individual, household and community levels with respect to resulting changes (Robbins 2004). Society's interaction with land-based resources is linked to local, regional and global power structures, while "power asymmetries and social inequalities shape patterns of land use and the management of natural resources" (Hornborg et al. 2012: 1). Political ecology is a useful approach for understanding the underlying processes of environmental problems such as environmental degradation and marginalization, as it "combines the concerns of ecology and a broadly defined political economy. Together this encompasses the constantly shifting dialectic between society and land-based resources and also within classes and groups within society itself" (Blaikie and Brookfield 1987: 17).

Separation of society and climate. Three quarters of academic publications on climate change adaptation viewed adaptation as a technical process of planned social engineering to guard against proximate climate threats, according to a literature review by Bassett and Fogelman (2013). This climate change adaptation narrative is based on the assumption of a dichotomy between climate and society, which is seen to represent two distinct domains, one physical and natural, the other cultural and social, that relate to each other as separate entities. Adaptation emerges as the logical process of planned social adjustment to climatic threats.

However, by assuming a dichotomy between society and climate, the climate change adaptation framework provides little room for climate and social institutions to coproduce lived environments, and there is a strong tendency within this narrative to marginalize questions of power and (agricultural) production within climate change. Doing so leads to a simplistic understanding of "climate change as a series of external shocks and disturbances to an otherwise coherent society" (Taylor 2015: xiii). Instead climate change can be seen as a series of tensions "in the way that meteorological forces are actively worked into the production of our lived environments" (ibid.).

Political ecology argues that rural people's contemporary experience of climate change needs to be understood within the broader historical context of a rural transformation. "Without linking localized expressions of ability to broader, historically formed structures of power and privilege, the idea of adaptation can act as a fundamentally de-politicizing concept that produces complex and contested social ecological relations to an abstract appeal to defend communities from external environmental disturbances and threats" (Taylor 2015: 7).

Political ecology is concerned with how different forms of power are produced and operate across spatial scales that allow some actors to influence, profit from and find security, while others are disempowered, marginalized and made vulnerable within the context of ongoing social-environmental transformation (Blaikie et. al. 1994). Political ecology views adaptive capacity and vulnerability as "expressions of complex social ecological relations between social class and gender in which such social agents' activity equally seeks to transform the lived environment in a historical context" (Taylor 2015: 9). Climate is therefore in part socially co-produced, and the same climate trend can manifest itself in radically different ways in two different locations and for different land-users and social groups.

Political ecology views climate change as intrinsically political. The analytical framework of climate change adaptation is inherently political, as it "shapes how claims can be made, who can speak with authority, who can produce knowledge on the behalf of whom" (Taylor 2015: 51). However, in spite of the obvious political nature of climate change adaptation, the majority of academic and development agency literature on climate change does not address this issue. In fact, climate change adaptation is commonly presented as a technical issue and as standing outside politics.

POLITICAL ECOLOGY ANALYSIS OF CLIMATE CHANGE HAZARDS ASSOCIATED WITH THE TESO FLOODS OF 2007-2015

While Teso Region has historically been subject to occasional floods or droughts (e.g. in 1972, 1997), the climate situation has significantly worsened since 2007, with erratic weather conditions becoming the norm. The region experienced widespread floods in 2007, 2009/2010 and 2012 that devastated the region, destroying crops and food reserves, damaging roads, mud-houses and other infrastructure, contaminating water sources and forcing many into temporary resettlement. The 2007 flood was

most widespread in Teso Region and was the only one of the three floods that received attention and support from central government and international disaster relief agencies. The 2007 flood has been repeated almost yearly since then on a more limited scale that has affected different sub-counties within the three study areas only. In 2012 Magoro sub-county of Katakwi was completely isolated by floods and only accessible by boat.

Severe floods in 2007 affected the study districts along with most of Central and Northern Uganda, see figure 4 below.

Figure 4. Districts affected by floods in Uganda 2007



The narrative of reports from OPM and emergency agencies is that the 2007 floods in the study districts were caused by excessive rainfall, which in the case of Teso Region turned the wetlands into lakes and caused the rivers to overflow. The cause of the floods is an extreme climate change event (nature) which requires action to be taken in enhancing the adaptive capacity of communities to allow them to establish a new equilibrium.

A political ecology analysis takes its point of departure in the relationship between nature and society. Such an analysis of the Teso flood will add four additional explanations for the flood. First, increased runoff from the uplands, where vegetation cover is degraded, decreasing water infiltration and increasing runoff, in Karamoja region located north-east of the study districts contributes to the severity of the floods. The inflow of water from Karamoja causes flash floods in Katakwi District. From Katakwi the excess water surges to Amuria District, where it settles and causes severe water lodging on the flat fields. Additional water flows to the wetlands and swamps of Soroti District and is eventually drained by rivers into the lake.

Second, the wetlands and swamps constitute a natural area for absorbing rain and floods. However, wetlands have increasingly been ploughed and planted with rice by farmers, turning them into dry land. This is in part caused by economic development and dysfunctional environmental protection, though the encroachment of wetlands is also an effect of the degradation of higher lying land and the general increase in temperatures. A survey by the environmental department of Soroti District reveals that the natural buffers consist of close to two hundred wetlands and swamps located across Teso Region. Traditional low-intensity uses, including livestock grazing, fishing, cutting straw for building, burning charcoal for home consumption etc., is conserving the wetlands as a buffer for floods, while the intensive cultivation of rice and other commercial crops is reducing the wetlands' capacity as a buffer.

A third contributory aspect to the floods is the silting up of the 170 dams that were constructed during the pre-independence period with the dual purpose of providing watering points for livestock and acting as buffer to absorb excess water during the rainy season.

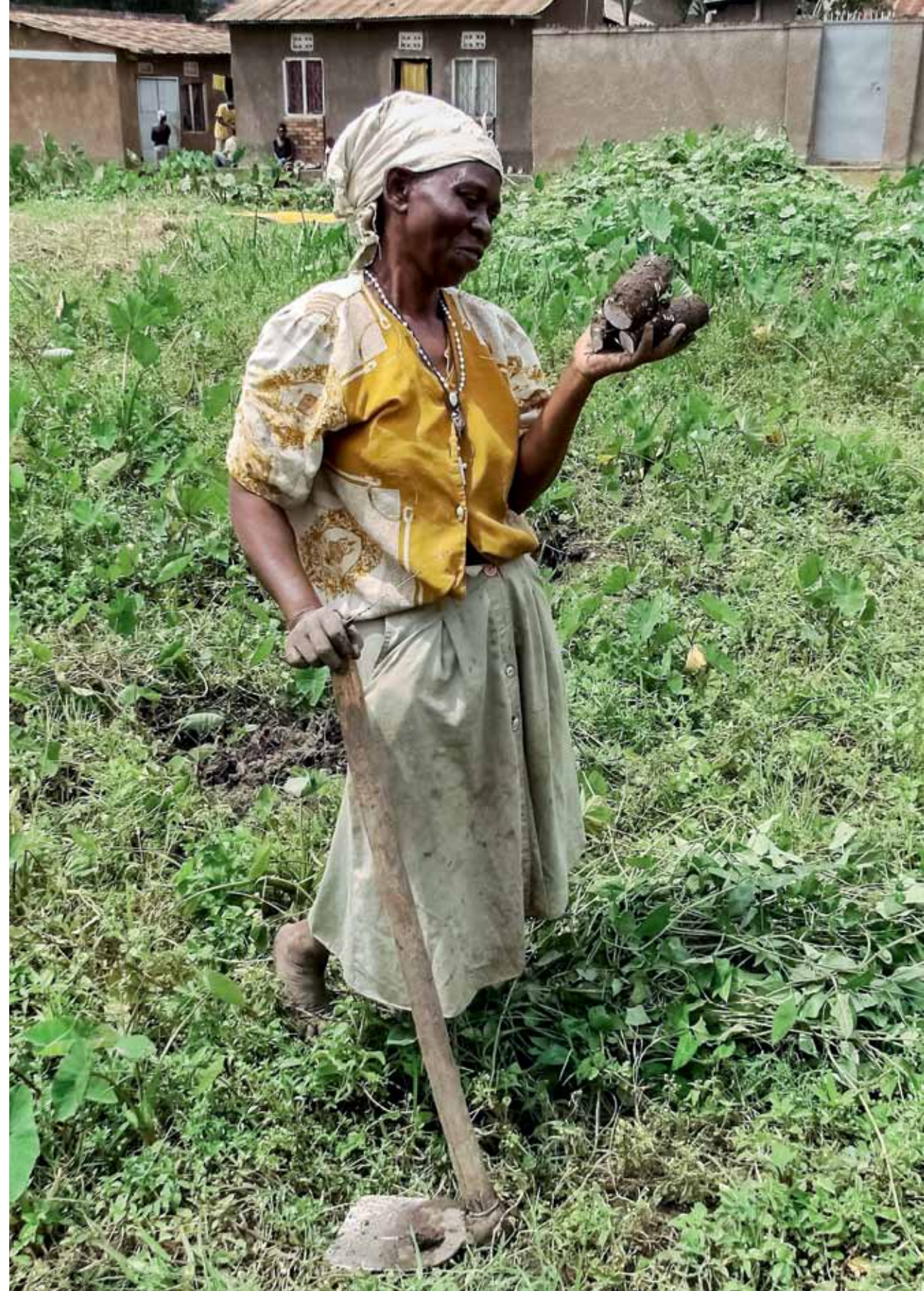
Fourth, farmers have increasingly settled along the wetlands to enable them to use it for cultivation. However, these settlements are much more vulnerable in situations of flood. Many of the people who have been resettled because of floods are living adjacent to the wetlands. Prolonged droughts often follow a severe flood. The latest

severe drought in the study districts happened in 2008, immediately following on from the 2007 flood. The 2008 prolonged drought had widespread negative impacts in all the three study districts. Harvests failed, pastures were reduced, cattle died and water points dried up. The drought was also associated with considerable environmental destruction and widespread uncontrolled bush fires.

The narrative discussed in reports by natural scientists, NGOs and OPM is that droughts are extreme events that are likely to be caused by climate change (nature) and that the extent to which such hazards cause vulnerability depends on people's adaptive capacity, which is linked to their socioeconomic status.

A political ecology analysis of the effects of droughts would include an additional explanation, namely that market forces systematically add to the effect of droughts. In the case of Teso, the study team uncovered a common practice among traders to accelerate buying grain from farmers in expectation of drought, thus artificially creating an additional grain deficit when the drought set in. It is general practice for such traders to hold back their grain until the price has increased many times over. In Soroti District we found that local banks were providing loans to such traders, as hoarding is a highly profitable business. Using the mainstream IPCC understanding of climate change adaptation, the cause of action to adapt to drought would be to enhance adaptive capacity among vulnerable people. However, applying a political ecology analysis would also call for national or local government regulation of traders to restrict hoarding practices.

In addition, a political ecology analysis seeks to identify the social links between different climate change events (e.g. droughts and floods). In the case of Teso Region, the CCRI team found indications that the prolonged drought in 2008 accelerated the unsustainable encroachment of non-poor farmers into wetlands to cultivate rice. While using the wetlands for cultivation provides an immediate adaptation solution to drought and increased seasonal variability in rainfall, it undermines the long-term adaptation to floods. The case study of elite capture of local government institutions in Awoja wetlands in Section 4 will provide a discussion of this process.





**LOCAL GOVERNMENT INSTITUTIONAL
CHANGE ENGAGING WITH CLIMATE
CHANGE ADAPTATION**

In this section, we present summaries of four case studies (intended to be published as journal articles) representing a diversity of experiences by local government in engaging with climate change adaptation.

PROJECT IMPLEMENTED PARALLEL TO LOCAL GOVERNMENT INSTITUTIONAL STRUCTURES

As part of the process to understand governance issues around climate change, the CCRI project undertook a post-ante study of the Territorial Approach to Climate Change (TACC) project in the Mt. Elgon region of Uganda. Donor support for planned climate change adaptation has largely been directed through a top-down project-intervention approach. Such approaches are said to diminish dialogue with beneficiaries and to be inadequate in addressing the complex challenges of adaptation (Adger, Lorenzoni and O'Brian 2009). In response, the UNDP developed the "Down to Earth: Territorial Approach to Climate Change" to engage with local governments, build partnerships and platforms for climate change planning, and pursue a territorial approach to adaptation. It was piloted in Uganda between 2012 and 2013 in partnership with Mbale, Manafwa and Bududa District local governments, which were highly prone to torrential rains and mudslides.

This approach fitted well with Uganda's decentralized local government system, which devolves planning to lower levels of governance. However, instead of engaging with the established political and administrative system of local government, the TACC was implemented through the establishment of parallel institutions, including a regional project forum which brought together all stakeholders concerned with the environment, a steering committee consisting of project management and selected district technical staff, and a Board of Trustees consisting of local leaders, top decision-makers and political heads that was responsible for vetting proposals, analysing reports and issuing approvals.

On the official UNDP website, <http://www.taccmbale.org/>, one can read that the TACC was a success story that produced a well-documented Integrated Territorial Climate Plan (ITCP) for districts to take further action. However, our study, carried out a year after project completion, revealed that there was no support among local government politicians for the plan, as it had been developed outside their structures. In fact the study team had difficulties in identifying anyone within the district administration who

knew about the project, as many of the staff who were involved in the project had since been transferred. The TACC plan was written by external international consultants after instrumental participatory consultation of stake-holders. While the content of the plan seems technically sound, our study concludes that the TACC approach is a "white elephant", in part because the cost of implementing the plan is far beyond the financial capacity of local government, in part because of the institutional problems.

COMMODITY MARKET-DRIVEN ELITE CAPTURE

Natural resource management policies based on the involvement of users in management institutions have been adopted to foster equitable benefit-sharing among common property users. This is because local institutions have been instrumental in safeguarding resources, including the protection of forests and watersheds (Sandbrook et.al. 2010). However, the effective functionality of this framework is contingent on the will to interpret and implement regulations appropriately.

In this study we discuss how the elite capture of management functions in local government fuels the degradation of common property resources and how mixed messages and fuzzy rules over the use of wetland resources by local and central government promotes competition among users. The study was conducted in Awoja watershed in eastern Uganda, where recurrent droughts are leading to increasing competition for wetland resources. The Awoja system is best remembered for the wide-spread floods of 2007, which affected the road infrastructure, food security and livelihoods through the mass displacement of people in the Teso sub-region.

A case-study design was used to obtain a detailed understanding of the competing interests surrounding the use of Awoja wetlands in Soroti District in Uganda. Data were collected for a period of six months in 2014 using key informant interviews with local leaders in Gweri sub-county and focus-group discussions with groups of farmers to further understand and validate the issues identified during the interviews.

Four main themes emerged from the analysis. First, the benefits of the emerging market price for rice were a key driver of bureaucratic inaction in the Awoja wetlands. The high market price for rice, coupled with government policies to promote domestic rice production to conserve foreign exchange, has given policy legitimacy to rice

production. This has been exploited by local bureaucrats and local resource management committees who dominate access to the wetlands. Secondly, the weakness of local public wetland management institutions is accelerating the elite capture of management institutions. Local government institutions are not enforcing the environmental regulations properly because they receive bribes from well-off rice cultivators to gain access to the wetlands. Members of local government wetlands management committees are also directly involved in cultivating rice in the very wetlands they are meant to protect. Commercial growers from town also rent large areas of swamp for rice cultivation, thus denying local users common access to the swamps. Local political leaders fear to take action against commercial rice farmers so as not to lose the support of these economic elites during the next elections.

Thirdly, fuzzy land property rights are becoming a major contributor to elite capture of the Awoja wetlands system. The various stakeholders and user groups claim ownership and user rights. Elders say wetlands have from time immemorial been a common property accessible by all, contrary to the new notion that swamps belong to the government. However, restriction on the use of wetlands exists only on paper. Limited enforcement is fuelling competition among users. The real beneficiaries of the fuzzy rules are elites and local bureaucrats, the custodians of the fuzzy rules, who interpret and apply the rules selectively. The institutions managing wetlands in the watershed have different interests that are not in harmony with the capacity of the wetlands. NGOs came together after the 2007 floods to offer relief to the flood victims. Now they have graduated their activities to cover issues of development and income-generation. While formally coordinated by the DRR committee that is part of local government, the coordination has declined with time, and many are now pursuing activities that are not necessarily in line with wetland conservation. Access to the NGO program is given to a few individuals rather than entire communities.

The commercialization of rice production is fuelling the degradation of Awoja wetlands and leading to worse floods. Elite capture of management systems is evident and appears to be propelled by the fuzziness of wetlands management instruments. Fuzziness has allowed entrepreneurs and commercial forces to challenge the status quo and capture political will, thereby creating a new power equilibrium in which exploitation and exclusion are dominant. This, together with inaction by bureaucrats in reprimanding their kin, has weakened local government's management capacity to the extent that up to now the authorities in Gweri sub-county have failed to demarcate the wetlands, unlike other sub-counties in Teso sub-region.

SOCIALLY INCLUSIVE PARTICIPATORY LAND-USE PLANNING AND MANAGEMENT

The main climate change-related outcome of the election of a new district chairman in Amuria District in 2006 (see Section 3.5) was the formulation of an environmental ordinance and the subsequent implementation of four so-called wetland management plans.³ The protection of wetlands is seen as an adaptive measure to reduce the hazards associated with extreme flooding. The district environmental officer and his team carried out a stakeholder analysis that mapped the many uses of wetlands, including young men herding livestock, women cutting grass for thatching, women fishing, women collecting firewood and men making bricks for sale. This revealed that the majority of the rural population was in support of wetlands conservation and that the encroachers are a small but influential minority, identified as well-off, influential farmers cultivating commercial rice using tractors. In addition it was found that the sub-county environmental committees were unable or unwilling to take on this group of influential farmers. On the basis of these studies, the district environmental officer and the district council established a social argument for the demarcation of wetlands. The 2007 floods made the district authorities realize that wetlands serve an essential role as sinks for the floods, and they established a longer term climate change adaptation argument for the need to demarcate wetlands.

Wetland management plans were developed through a participatory planning process. With a view to involving all stakeholders, a team from Amuria District Council, headed by their district environmental officer, visited all the parishes (administrative unit between sub-county and village) located adjacent to Omunyal wetland in 2010-11. The chairman of the district council often participated in the community planning meetings, in part to show people that the planning process was supported by the district council. This was particularly important when the demarcation process was opposed by influential local rice growers. In part the chairman also used the meeting to gain political support.

The wetland management plan was institutionalized in 2012 to provide a detailed border inventory, clearly demarcating where the wetlands end and where the dry land starts. To enforce the wetland management plan, the participatory planning process decided to establish a network of volunteer whistle-blowers linked to the sub-county environmental office and sub county environment committees. These whistle-blowers report violations of wetlands use to the environmental officer. The district has budgeted for biannual district monitoring teams composed of members of the sub-

³ Interview with Amuria District Environmental Officer, April 2013.

county environment committees and technical staff, who verify the violators and fine them. As part of the implementation of the Environmental Ordinance, one police officer from each police post has received environmental training and been selected as the focal point person for the wetland management plan in the sub-county.

The district environment officer, together with the communities and the environment committees, is setting up buffer zones in the wetlands especially for the cultivators in order to reduce potential conflicts among the different users. The plan is to avoid the digging of channels and water abstraction in the wetlands, to prohibit seine baskets that trap all categories of fish and to avoid the creation of embankments in the wetlands. This still allows other traditional activities to be carried out in the wetlands, like fishing, cattle-grazing, hunting and the harvesting of materials for crafts.

SUB-DISTRICT INSTITUTIONAL CHANGE

This study highlights the character of the governance of local adaptation in a changing climate and explores how local government institutions and communities deal with climate-induced problems in practice. The study was conducted in Magoro sub County in Katakwi with the theoretical ambition of improving understanding of institutional change processes occasioned by climate change and social pressures within the lived environment, using an interpretative qualitative orientation methodology (Marriam et al. 2002). Five themes emerged from the study:

Co-production of solutions to co-produced hazards. Climate change-induced weather patterns and more extreme weather events are only part of the explanation for the population's vulnerability in Magoro sub-county. Community- and governance-induced factors have generated the climatic hazards. Extreme population pressure on land is leading to land degradation and causing worse floods. Inadequate provision of relief supplies and poor health-care services in the displacement camps, as well as cattle-rustling, have heightened vulnerability in Magoro. Moral degeneration in the camps has reduced peoples' ability to engage in economic activities that would help them cope with climate change. Restriction of access to land by the Uganda Wildlife Authority reduces cultivable areas, thereby worsening the food security situation. Inaction by district leaders on matters raised by the sub-county authorities has caused frustration among the leaders of Magoro sub-county.

Despite the above sub-county and local government institutions have pooled the meagre resources at hand to innovate institutional mechanisms that involve communities in co-producing solutions to climate change problems in the sub-county.

Some of the indicators of bricolage processes include creative joint settlements of locals and cattle-rustlers in a bid to forge a peace with cattle-rustlers, the establishment of local committees to plan and implement practical measures involving changes in institutional norms, and institutional compromises. These have helped to solve local problems in a unique way.

Emergence of new institutions in response to climate change. New institutions have emerged to address the effects of floods, droughts and gradual climate change. These institutions are collaborating by means of hybrid arrangements in a bid to be more effective and to reduce the costs of operations. Multi-stakeholder teams created by reconfiguring existing institutions have been established by NGOs and the sub-county local government. These teams carry out assessments and recommend support to flood-affected people. User involvement in management institutions and collaboration among NGOs is beginning to transform the working of bureaucratic institutions into more responsive systems.

Changes in institutional mandates. Many NGOs have changed from handling disaster relief activities to planning and investing in disaster risk reduction. Since the 2012 disasters, joint village "Reflective Circles" established by NGOs to discuss matters specific to existing NGO projects have introduced disaster risk reduction components in order to address climate change more locally. Community work plans have been developed and integrated into sub-county work plans. The emergence of parish coordination committees, a Teso DRR platform, which brings together all stakeholders in the Teso sub-region and finally the establishment of a webmail accessible internationally (www.tpoug.org) are some of the most notable innovations that have emerged in Magoro. This has led to different ways of working than before.

Emergence of new practices. Collaboration with user communities has led to new technical and institutional innovations in Magoro sub-county. These innovations have been stimulated by typical dilemmas. First, the sub-county allows the cutting of trees to build flood-resistant huts in violation of the regulations against deforestation and the cutting of trees. Eventually, farmers and NGOs innovated the use of damp proof cores (DPCs) for the construction of flood-resistant huts using unburnt mud bricks. This enables the sub-county to reinstate the law against cutting trees. Another dramatic innovation is the use of flood-receding waters to group rice, thereby avoiding the risk of degrading the wetlands.

Changes to Cultural Norms. Women are deliberating in village meetings more than ever before, due to the involvement of users in the management of adaptation activities as equal partners. Some women have even taken on leadership positions in DRRCs.



CONCLUSION

ADMINISTRATIVE, FISCAL AND POLITICAL DISCONNECT BETWEEN NATIONAL AND LOCAL GOVERNMENT POLICY AND PRACTICE IN SUPPORTING CLIMATE CHANGE ADAPTION

The emergence of climate change adaptation as a policy field over the past decade has influenced institutional roles and responsibilities at the national, meso and local levels. Disaster response has a high level of political attention and is naturally institutionally anchored centrally, in the office of the prime minister. A subsidiarity analysis of support for climate change adaptation clearly identifies local government at the LC5 and LC3 levels as the appropriate and most cost-effective level of decision-making and action. Nevertheless, the 2012 implementation framework for national climate change policy favours a model of de-centralisation where the central ministry (e.g. Water and Energy) retains the decision-making power and fiscal resources and reduces the role of local government to implementing partners, which is not compliant with the Decentralization Act.

The low level of subsidiarity and therefore the likely low level of cost-effectiveness of Uganda's implementation framework for National Climate Change Policy are likely to be noticed by the UN and internal donor agencies that are expected to finance policy implementation. Donors are therefore likely to continue their current practice of channelling their investments through projects. Such projects are, however, associated with significant problems of their own, as they are typically governed and implemented through parallel institutions involving local government as implementing institutions rather than partners.

AMBIGUITY IN UNDERSTANDING CLIMATE CHANGE ADAPTATION

The science assessment embraced by the UN is clear: the climate is changing, increasingly causing hazards for people, and there is a need for immediate mitigation and adaptation action. However, considerable ambiguity remains among politicians and technical staff at the international, national and local government levels, as well as among individual farmers and farmers' leaders, with regard to whose reality counts, what should be done, who should do it and how it should finance its activities.

At the national policy level, a great deal of confusion surrounds the overlap and interface between National Disaster Preparedness Policy and National Climate Change Policy. Minimal coordination seems to take place at the ministerial level, and neither of the policies have budget lines to support implementation by local government. The Ministry of Disaster Preparedness has a very limited operational budget and only seeks international support in case of dramatic natural disasters affecting many people (e.g. the 2007 floods in Teso Region) or receiving wide media coverage (e.g. the landslides in Mbala District 2009). Drought is a type of extreme climate change event that affects most people, but it is seldom declared a disaster.

There is ambiguity among local government staff concerning the institutional implications of the overlapping policies. The Disaster Preparedness Policy has established Disaster Risk Reduction Committees at the district and sub-county levels. However, these are dormant and are only activated if the Ministry of Disaster Preparedness declares a disaster. In the past decade this has happened only once in Teso Region, in the 2007 floods. Meanwhile Teso Region has suffered extreme climate change events subsequently, such as the 2008 drought, the 2009-10 floods, the 2012 floods and the 2014-2015 drought (El Niño). At the local government level, such 'more localized' natural disasters that are not recognized by the Ministry of Disaster Preparedness are increasingly assumed to be governed by the 2012 National Climate Change Policy. This is often done by activating the local Disaster Risk Reduction Committee, but assuming a new role and mode of operation and no longer linked to the Ministry of Disaster Preparedness.

As explained in Section 2.4, climate change adaptation is widely understood as a technical process of planned social engineering to guard against proximate climate threats. This narrative assumes a dichotomy between society and climate change as an external shock that disturbs a society in balance. The closer local government staff are to the frontline of people affected by climate change, the greater the chance that they experience ambiguity, as this climate change adaptation framework provides little room for climate and social institutions to coproduce climate change hazards (see next section for a more in-depth discussion).

Mitigation and adaptation are two very different processes, one being concerned with reducing global CO2 levels and the rate in which the climate is changing, while the other seeks to reduced people's vulnerability to climate change hazards. However, the understanding of the two is often mixed up among NGOs, district staff and farmers. The most common example is tree planting, a very widespread activity

among both NGOs and districts. This is widely promoted as a very practical climate change adaptation approach, while its impact in most cases is mitigation only (each mature tree stores about 25 kg of CO₂). This ambiguity leads to distorted actions, as when a group of poor women in Soroti prioritize their extremely limited resources to plant pine trees as a climate change adaptation measure, believing that such action will contribute to solving the challenge of climate change. This ambiguity is also fuelled by much of the international funding of Ugandan NGOs, which is aimed at mitigation rather than adaptation.

Considerable ambiguity arises from the disconnect between the national and local layers of governance (discussed in the previous Section 5.1) caused by decision-making power and financial resources being concentrated at the ministry level, while the action takes place at the district and sub-county levels. Local government staff and politicians are uncertain what roles they should be playing, as they experience considerable pressure from people affected by climate change hazards, while being seriously limited in their response because of a lack of access to finance.

When NGO projects engage in support for climate change adaptation, they tend to apply their own interpretation of local government rules and regulations and seek to influence local government institutional arrangements and mode of operation. When several projects are ongoing in a particular location, representing the only funded climate change adaptation action, they have a strong fragmenting influence on local government's ability to act holistically and undermine coordination and political priority-setting. This adds to the uncertainty among local government staff as well as local people.

Finally, uncertainty is also widespread among local natural resource managers. One example is the ambiguity over wetland use when better off farmers forge alliances with politicians advocating their commercial use through rice cultivation, while the district natural resource officer seeks to uphold conservation regulations in alliance with local people involved with traditional and more sustainable use of the swamps. Another example is when some people take advantage of fuzzy policy frameworks (constructive ambiguity), especially those located adjacent to wetlands who take advantage (by using or renting out wetland adjacent to their own fields) of the absence of any clear demarcation between cultivated areas and wetlands.

CO-PRODUCTION OF CLIMATE CHANGE HAZARDS REQUIRES CO-PRODUCED ADAPTIVE SOLUTIONS

Climate change-induced weather patterns and more extreme weather events have only been part of the explanation for vulnerability in areas affected by extreme climate events. The way people have interacted with land-based resources prior to the floods and droughts, together with the power asymmetries and social inequalities, have had a great effect on the sustainability of the ecosystem, thereby worsening the effects of droughts and floods.

Due to a lack of the technical and financial capacity of both national and local government institutions, public services for adaptation to climate change are being governed by various combinations of the state, social networks, individuals, entrepreneurs and external aid agencies. Such agencies provide different modes of brokerage, mediation and translation that create the basis for different forms of the co-production of collective services.

Co-producing solutions can either solve a situation or create a new one. On the one hand, the collaboration of local communities with public institutions has created a space for local learning of a more adaptive management of resources. In Magoro sub-county in Katakwi District, for instance, the use of receding waters for rice cultivation is drawing farmers away from cultivating rice in the swamps, while collective action in the construction of village drainage channels is solving the problem caused by inappropriate settlement on former waterways, and new ways of constructing flood-resistant huts without using tree trunks is reducing deforestation in this fragile environment. All these represent co-produced solutions to co-produced hazards.

Local NGOs working with local government in districts neighbouring Karamoja have established permanent settlements in Teso region to reduce drought-induced resource conflicts between Karamoja and Teso. This conflict long reduced the capacity for local agricultural production, thereby increasing the vulnerability of this area to climate change hazards.

On the other hand, however, collective action for adaptation has yielded mixed results. In the Gweri wetlands, for instance, there has been stiff competition for resources among user groups, as well as competition among institutions for the management of natural resources. This has opened a space for the elite capture of resource management institutions at the expense of social exclusion and resource degradation thus leading to the co-production of hazards.

Indeed, the way flood-related solutions have been co-produced has both civic and insurgent aspects. Insurgency opens up new possibilities about how to be governed, by whom and to what extent. What will come out of these new forms of public service delivery remains uncertain.

In line with the principles of subsidiarity, and with the realities of the co-production of adaptation locally, there is a justification for a more decentralized model of adaptation funding that enables us to redress the contextual constraints on adaptation, since the lack of a formal capacity for adaptation means that climate change adaptation will continue to be co-produced by the multitude of service providers and service users.

HETEROGENEOUS CONTEXT-SPECIFIC INSTITUTIONAL DYNAMICS OF LOCAL GOVERNMENT'S SUPPORT FOR CLIMATE CHANGE ADAPTATION

Case studies carried out under the CCRI program reveal that the institutional dynamics of local government support for climate change adaptation is heterogeneous. New mechanisms for resource management and collective action have been borrowed or constructed from existing institutions, styles of thinking and sectioned social relationships in a process of institutional bricolage. Although institutional bricolage defines quite permanent changes in institutional practice occasioned by interaction between institutions and clients, the institutional practices in Magoro point to an adaptation trend in which local institutions have begun to do things differently to co-produce solutions with community members.

However, despite standard national policy frameworks, adaptation to climate change has tended to be uneven across decentralized local governments within Teso sub-region. In Magoro sub-county in Katakwi District, for instance, communities are deeply involved in disaster risk reduction programs in partnership with local government and NGOs, while in the neighbouring Gweri sub County in Soroti District

conflicts and struggles have erupted among competing enterprises, as well as among management institutions. In Kuju sub-county in Amuria District, meanwhile, there is strong district-led legislative control over natural resources involving the demarcation of wetlands and the setting up of monitoring systems to curb encroachment by user groups during droughts. Different power constellations at the district and sub-county levels are evident and tend to define the dynamism and political will to address climate change as a local council agenda. Also evident is path dependency at the district level in Katakwi and Soroti Districts, where the demarcation of wetlands has failed. In sharp contrast is the situation in Magoro sub-county, where co-produced climate hazards are being solved by measures co-produced by different service providers and users.

LOCAL GOVERNMENT CREATION OF AN ENABLING ENVIRONMENT FOR CLIMATE CHANGE ADAPTATION: A QUESTION OF ACCESS TO FINANCIAL RESOURCES, BUT ALSO OF POLITICAL WILL

The lack of the technical and financial capacity for government institutions to find an answer to climate change-related floods has been critical. What are needed are changes in the relationship between the public authorities and communities in areas prone to extreme climate events. As a result, the residents of affected areas are reinventing the daily practice of public services by engaging actively in their provision. In the Teso context, where both national and local governments lack the relevant means to mitigate the effects of climate change, the involvement of zealous politicians as in Amuria District has been essential. This has increased the legitimacy not only of local government, but also of those politicians involved in creating an enabling environment for climate change actions.

An enabling environment has also been created through the adoption of participatory solutions to climate change, as in Magoro in Katakwi. However, residents have had to count on their own forces, since to a large extent the provision of flood-related services has not relied on the efficiency of public institutions, but rather on a variety of social networks and some NGOs.



RECOMMENDATIONS

The ambiguities in climate change policy should be addressed through the active involvement of local institutions and communities in policy development and interpretation.

It is important to set up the necessary institutional arrangements that allow continuous involvement in the governance of climate change adaptation. Such institutions should also be changed, with the participatory monitoring of activities at all levels in a way that allows for institutional learning. As climate change is highly discretionary, ambiguity can best be minimized by ensuring the broad involvement of those affected by climate change hazards.

**COST-EFFECTIVE CLIMATE CHANGE ADAPTATION REQUIRES THE
EVOLUTION OF POLITICAL POWER TO LOCAL GOVERNMENT AND
INSTITUTIONAL MECHANISMS FOR FORMULA-BASED TRANSFERS
OF FISCAL RESOURCES AS CONDITIONAL GRANTS**

No matter what the outcome of COP 21 in Paris, international funding for climate change adaptation is likely to be less than expected. The Government of Uganda may eventually allocate budget funds to this policy arena, but overall funding for climate change adaptation is still likely to be limited in relation to need. Choosing the most cost-effective institutional mechanism for rural climate change adaptation is therefore crucial. The analysis of subsidiarity in this report has identified district and sub-county levels as the appropriate administrative levels for decision-making and action to take place. A mechanism is therefore needed that enables international funding to be channelled directly to the administrative and political levels at which it is used.

A fiscal transfer mechanism of conditional grants, similar to what is currently the practice in other priority sectors, is proposed. Such a conditional grant system should be formula-based, thus ensuring that access to funds is regulated by the capacity to use them in a cost-effective manner. This study has also shown that politics matters. It is therefore suggested that new institutions (climate fora) at the sub-county and district levels be established as units of governance and for setting priorities and planning climate change adaptation actions.

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