

The potential of camel production in resilience building to climate variability in Karamoja, Uganda

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Abstract

Climate change has continued to be a global challenge with the effects manifested to a greater extent in the arid and semi-arid areas like Karamoja. In these areas, livestock is the key livelihood option which is greatly affected by the variations in climate, thus potentially making livestock less effective as a sustainable livelihood option. This would greatly increase the vulnerability of the communities to the effects of climate change. The project investigates the potential contribution of camel production in resilience building for the pastoral households in Karamoja. Camels are able to survive well in the semi-arid areas due to their biological and physiological adaptations which help them cope with harsh environmental conditions. However, little is known why the Karamojong are slowly and increasingly adopting camels, and how wide spread the camels are in Karamoja, as well as their contribution to the pastoral livelihoods resilience against climate variability. Further, there is a dearth of information on the camel product value chain in Uganda. The project deploys both biophysical/vegetation assessments as well as social research approaches to gather the required information. The findings from the vegetation assessment are expected to form a primary database for the Karamoja region. The findings from the socio-economic surveys and value chain assessments could be used by the Zonal Agricultural Research institute and district authorities to promote camel rearing in the region.

Key words: Climate change, pastoral households, Uganda

Résumé

Le changement climatique a continué d'être un défi mondial avec les effets qui se manifestent sur une plus grande mesure dans les zones arides et semi-arides comme Karamoja. Dans ces zones, l'élevage est l'option des moyens de subsistance clé qui est grandement affectée par les variations climatiques, rendant ce dernier l'élevage potentiellement moins efficace comme option durable pour la subsistance. Ceci permettrait d'accroître considérablement la vulnérabilité des communautés aux effets du changement climatique. Le projet étudie la

contribution potentielle de la production de chameau dans le renforcement de la résilience des ménages pastoraux dans la région de Karamoja. Les chameaux sont capables de bien survivre dans les zones semi-arides en raison de leurs adaptations biologiques et physiologiques qui les aident à faire face à des conditions environnementales difficiles. Cependant, on sait peu pourquoi les Karamojong, lentement mais sûrement s'adonnent à l'adopter des chameaux, et la répartition des chameaux dans Karamoja, ainsi que leur contribution à la survie des éleveurs dans le contexte de variabilité climatique. En outre, il y a un manque d'informations sur la chaîne de valeur des produits de chameau en Ouganda. Le projet déploie deux évaluations, celle de la végétation et celle biophysique, ainsi que des approches de recherche sociale pour recueillir les informations requises. Les résultats de l'évaluation de la végétation devraient former une base de données primaire pour la région de Karamoja. Les résultats des enquêtes socio-économiques et des évaluations de la chaîne de valeur pourraient être utilisés par le «Zonal Agriculture Research Institut » et les autorités du district pour promouvoir l'élevage des chameaux dans la région.

Mots clés: changement climatique, les ménages pastoraux, l'Ouganda

Introduction

Climate change is impacting both crops and livestock systems and will continue to do so into the foreseeable future (Challinor *et al.*, 2007) with populations in the developing world that are already vulnerable and food insecure likely to be most affected (Nelson *et al.*, 2009). In arid and semi-arid areas that experience intense climate change and variability events; pastoralism has traditionally played a fundamental role in sustaining communities. This is because pastoralism is the most sustainable form of agriculture in the drylands where crop growth is hampered by moisture limitations (IFAD, 2000; Hesse and Cotula, 2006). Livestock is a key asset to pastoral communities; contributing to food and nutritional security, income generation and improving their livelihoods (Ngugi and Sanginga, 2013). Further, livestock keeping in the arid and semi-arid lands presents both productive and buffer assets through serving as saving options but most importantly as food security buffering against drought stress (Heffernan, 2012). However, the recurrent and prolonged droughts continue to greatly affect the pastoral and other dryland livelihoods and production system including its impacts on pasture production, water availability, disease risks and thermal stresses (Thornton *et al.*, 2009; Megersa *et al.*, 2014). These patterns will intensify the vulnerability of livestock systems, potentially making livestock less effective as a sustainable livelihood option (Elhadi *et al.*, 2012a; Sejian *et al.*, 2015).

Pastoral communities have overtime adopted different strategies to survive the effects of prolonged drought. IUCN (2010) reported strategies including breeding locally adapted livestock species, diversifying the livestock species kept, and implementing resource management practices like calf grazing paddocks. Literature (e.g. IUCN, 2010; Kagunyu and Wanjohi, 2014; Kagunyu and Wanjohi, 2015) has further revealed that pastoral tribes such as the Samburu and Turkana in northern Kenya started to increase the number of camels that they manage, substituting them for cows in order to have more drought-resilient livestock. Camels unlike other livestock are well adapted species that are known to survive

in extreme climatic conditions of the arid and semi-arid areas which are not suitable for crop production and where other livestock species hardly thrive, due to the biological and physiological adaptations (Awoke *et al.*, 2015; Kagunyu and Wanjohi, 2014). Field (2005) estimated that the volume of milk produced by camels is six times that produced by indigenous cattle found in the dry lands.

The Karamoja region in Uganda is one of the arid areas in the country characterized by livestock systems as the core livelihood option. It however continues to experience prolonged and recurrent droughts increasing the people's vulnerability to the effects of climate change. According to UBOS (2009), there was an estimated camel herd size of 32,870 during the 2008 livestock census, with a potential to increase overtime. However, little is known why the Karamojong have continued to rear camels, how wide spread is the camel belt in Karamoja, and what contribution camel production has on pastoral livelihoods resilience against climate variability in Karamoja. Further, there is a dearth of information on the camel product value chain in Karamoja and in Uganda as a whole. This project will therefore be the first of its kind in Uganda to explore the intricate contribution of camels to pastoral livelihoods and their resilience to extreme climate events such as drought.

The Project focus and implementation

The project activities include: profiling the distribution of camels and characterizing their foraging range; determining the factors influencing pastoralist's choice of camel production as well as the contribution of camel production to household well-being; and articulation of the camel products value chain. Specifically, both biophysical/vegetation assessments as well as social research approaches have been deployed to gather the required information. The social research methodologies are targeting both the camel and non-camel rearing households to be able to determine relevancy of camel rearing to enhancing resilience and improvement in household well-being. The field sites are located in Rupa sub-county, Moroto District and Loro sub-county and Amudat Town Council in Amudat District. The project activities are implemented by the staff and two MSc. Students from the College of Agricultural and Environmental Sciences, in partnership with Nabuin Zonal Agricultural Research and Development Institute and the International Institute for Tropical Agriculture.

Expected outputs and impacts of the Project

The vegetation assessment undertaken by the project provides a prime inventory data set for this region. While the National Biomass Study undertook periodic vegetation assessments in most parts of the country over the period 1992-2002 (NBS, 1992; MWLE, 2003), there were limited activities in the Karamoja region due to the political instability. The work done by this project would therefore greatly contribute to the National database. The project will also be able to provide more reliable information on the spatial distribution of camels in the target districts as well as the trends of camel production in the area. Further, literature from Northern Kenya (Elhadi *et al.*, 2015) has shown that the sale of camel milk contributes significantly to pastoral household income contributing up 41% of household income and is essential for food security during dry seasons. Also, literature has revealed that camels are

often preferred due to their ability to withstand stressful conditions and produce milk for longer periods as compared to cattle. This project will unveil these assertions in relation to the Karimajong who traditionally are pastoralists and depend a lot on milk as a food security component.

In addition, literature (Musinga *et al.*, 2008; Adugna *et al.*, 2013; Faye *et al.*, 2014) has shown that the development of camel products' value chain is gaining support in a number of countries where camel rearing is common including Kenya, Ethiopia, Somalia, Saudi Arabia among others. This project is working closely with camel farmers to identify the existing value chains as well as opportunities that could be harnessed to improve the value chains, and thus increase returns to the farmers. The findings from this project are expected to be utilized by the Nabuin Zonal Agricultural Research and Development Institute in collaboration with the district authorities and other development partners to promote and foster camel rearing in the Karamoja region.

Given that this research is the first of its kind in Uganda, a project website (<http://cironetug.com/caprec/team.php>) has been designed to continuously share information with the wider community. Information on this website will to a great extent inform the wider community about the pastoral livelihoods in the Karamoja region but with specific emphasis on camel rearing and its potential contribution to enhancing resilience to the effects of climate change.

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