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INSTITUTION: **UNIVERSITY OF BOTSWANA-BOTSWANA**

MDP-IFAD RESEARCH PROPOSAL-IFAD INTERNSHIP PROGRAMME-EAST AFRICA-UGANDA

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MAY 2017

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1. Abstract

The adverse effects of climate change are already being felt especially by small-holder farmers across the globe; however sub-Saharan African small-holder farmers especially in East Africa are the most at risk. Risk factors range from socio-economic dynamics such as limited access to social, economic capital resources and information. To address these challenges associated with agriculture and climate change there is need for interventions that can simultaneously bring in all concerned institutionally oriented actors being the farmers themselves, policy implementers and formulators to help formulate or re-direct policies that integrate inter-disciplinary approaches. Most importantly, approaches that will address food insecurity and increase access to pro-agriculture inputs for the marginalized groups and strategically coerce adaptation and build resilience to climate change and enhance the reduction and or removal of greenhouse gases emissions where possible. At country level it is important to assess the extent of the impact of existing policies in Uganda and their potential in driving the concept of climate smart agriculture in the post war district of Nwoya with consideration of the low productivity crops currently under cultivation and the vulnerable climatic conditions such as low rainfall compared to other parts of the country. Additionally policy direction on dynamics associated with the post-war effects such as land access and allocation including social aspects such as psycho-social dimensions of conflict resolution will be considered basing on participatory methods especially involving the input of the needs of government officials to better synergise effective policy formulation/reforms and implementation that is specific to the needs of the district.

2. Introduction and contextual information

A majority of the world's population lives within rural settings and heavily depends on agricultural activities for a livelihood; mostly characterized by mixed and sedentary farming with the use of simple economically sound practices such as growing rain fed crops and

rearing pasture fed livestock (FAO, 2013). Equally due to socio-economic challenges that render the majority of the population in Sub-Saharan Africa incapable of applying climate adaptable agricultural practices Bryan *et al.* (2013), the risk of food insecurity and hunger is likely to rise. Certain regions of Sub-Saharan Africa like East Africa whose rural population is estimated to be poor yet is primarily dependent on agriculture are in dire need of support mechanisms and can equally prove to be resilient to potential effects of climate change with specific tailor made approaches (Benjamin *et al.*, 2014). Uganda in this case as the country of study is faced with adverse effects of climate change due to its low adaptive vulnerable capacities; this is further aggravated by lack of institutional capacity and inadequate skills for climate adaptation including lack of disaster preparedness (Kasimbazi, 2013).

3. Country of field practicum

Uganda, specifically Nwoya district has been selected as the country of the field practicum.

4. Geographical location within the country

Geographically, Uganda is a landlocked country located in East Africa and borders Sudan in the north; 435 kms, Kenya in the east; 933kms, Rwanda in the south; 169kms, Tanzania in the south; 396 kms and the Democratic Republic of Congo (DRC) in the west; 765kms (Kasimbazi, 2013; MCIA, Undated).

The Uganda Bureau of Statistics (UBOS, 2016) further outlines Uganda's geographical location as follows; the country lies between 10 29' South and 40 12' North latitude, 290 34 East and 350 0' East longitude. It has a total area of 241,551 square kilometres, of which the land area covers 200,523 square kilometres.

The report further elucidates Uganda as has an equatorial climate, with most parts of the country recording annual rainfall of between 750 mm and 2,100 mm. Central; Western and Eastern regions have two rainy seasons, from March to May for the first rains, and the second rains from September to November. The Northern region receives one rainy season from April to October, and the period from November to March has minimal rain.

It further expounds in most parts of the country, the mean annual temperatures range from 160 C to 300 C. Nevertheless, the Northern and Eastern regions sometimes experience relatively high temperatures exceeding 300 C and the South Western region sometimes has temperatures below 160 C.

5. Historical considerations

The history of Uganda is outlined by (KAS, 2011); Bandyopadhyay and Green (2012), in its pre-colonialism, colonialism and post-colonialism times as follows; The pre-colonialism times were marked with traditional governance systems comprised of kingdoms. Its colonial era had much influence from economical driven and religious interest groups. The Arabs in the 1830s had economic interests that comprised of ivory and slave trade with increased Islam influence. The British later in the 1860s arrived as explorers and are cited to have conquered Uganda after several battles in which then Uganda became a protectorate in 1894. The era of European explorers had an influence on Uganda's social and economic structures such as formal education and infrastructure development with the construction of a railway line. Equally the period of colonialism was greatly marked with economical exploitation by the British based on the export orientated cultivation of monocultures like cotton and coffee led to famines and the favouritism of the Buganda kingdom tightened the contrast between different tribes, this marked the massive struggle for independence against colonialism and consequently earned Uganda her independence in 1962. Following independence several politically led power struggles characterized by socialist rule and abolition of the traditional kingdoms led to conflicts, massive societal unrest and economic decline and finally settled for peace about two decades ago.

6. Demographic situation

As of the 2014 national population and housing census, the Uganda Bureau of Statistics (UBOS), (2016) records the population of Uganda to be at 34,634,650. The male population was at 17,060,832 and females at 17,573,818. The average population growth was recorded to be at 3.0%.

7. Socio -economic data

The Uganda Vision 2040 (2007) outlines Uganda's socio-economic situation as that of recuperating since the mid-1980's despite previous challenges characterized by conflicts and social disorientation. A significant stable economic growth of average 6.4% has been recorded since 2002 and has created conducive atmosphere for further economic growth. Despite this significant progress Uganda is projected to be having to undergo massive transformations in many of its sectors in order to reach an upper middle income status. The World Bank (2016b) gives an elaborative account of Uganda's socio-economic status as that of the second fastest percentage point reduction in Sub-Saharan Africa as the people living on less than US$1.90 per day was reduced by 2.7 points per year during the 1993 to 2006 period. Despite this substantial progress The World Bank (2016b) further indicates Uganda as facing widespread poverty with the majority of the population living below the international extreme poverty line of US$1.90 a day. Canagarajaha (2001) and The Uganda Bureau of Statistics (2016) findings indicate that about 80% of Uganda's rural population was found to be dependent on mainly subsistence agricultural activities. Agricultural activities were found to be of low-productivity due to low technology investments and vulnerability to climate shocks and severe pests, plant and animal diseases and price fluctuations (UNDP, 2014)

8. Considerations relating to gender and development

Lack of gender dis-aggregated data is often indicated by a number of scholars and development organizations as impeding appropriate analysis of the role of men and women in development in Uganda, especially where inputs and outputs of production are concerned. Quisumbing (1996), expounds on the confusingly interchangeably used words 'gender and sex' as follows;

> "Sex differences are due to innate biological differences between men and women. Gender differences, on the other hand, arise from the socially constructed relationship between men and women. These differences affect the distribution of resources and responsibilities between men and women, and are

shaped by ideological, religious, ethnic, economic, and cultural determinants"

A quarter of Uganda's households are female headed with poverty recorded to be high than in male headed households. Appleton (1996) concluded in his analysis of the first nationally representative household survey of Uganda that women were generally economically disadvantaged due to inequalities associated with educational attainment and that some subgroups of women especially widows and those in urban areas were more economically disadvantaged. He further indicated that high remittances proceeds similarly played a key role in maintaining economic discrepancies between men and women. The Uganda Bureau of Statistics (2016), equally recorded a high percentage of remittances among female headed households (21%) while male headed households stood at (16.5%). In a study carried out by (Jost *et al.*, 2016), on understanding gender dimensions on climate change and agriculture, the researchers are of a strong view that women within rural settings were more susceptible to climate change and are less able to adjust to agriculture focused adaptation methods as a result of gendered social norms and roles. This was found to affect their access to information and extension services compared to their male counterparts. Additionally FAO, (2011), estimates that the role of women in small holder agriculture could have positive impact for food production and security by 20-30% and reduce the total number of undernourished people by 12-17 percent.

9. Environmental concerns and major environmental issues

The (MCIA, Undated) report indicates that major environmental issues faced by Uganda are largely soil erosion, water pollution, air quality issues, deforestation, invasive species, overgrazing, destruction of wetlands, and poaching of endangered species.

Additionally, César and Wolf (2013) give an elaborative outline of Uganda's environmental issues in a policy brief and indicate that the country is among one of the richest in natural resources and diversity in Africa with about 80% of the population highly dependent on the resources for livelihoods.

The authors further indicate that Uganda has a variety of ecosystems that range from forests, wetlands, rangelands, open water bodies, agricultural landscapes to wildlife protected areas. Ecosystems are of crucial importance in the sustenance of the population's lives and

livelihoods as they help balance the environmental mechanisms, they serve as an important food source and provide by-products for the people.
César and Wolf additionally specify seven major environmental issues that threaten Uganda's environment as land degradation, declining water resources, loss of biodiversity, challenges related to climate change and declining wetland areas. Linked to environmental issues and concerns are water and air pollution aggravated by lack of good sanitation facilities and the dependence on wood fuel by a majority of the population.

10. Primary sources of employment and production

The primary sources of employment and production in Uganda are agriculture, which account for about 64% of the population engaged in subsistence agriculture (UBOS, 2016). Non-farm sources of employment are often a supplementary means of livelihood and accounted for nearly 24% in 2013 (UNDP, 2014).

11. Market linkages or lack thereof

According to USAID (2015), existing market linkages are agricultural focused as about 70% of the population is engaged in agricultural production. Additionally USAID acknowledges that despite the existence of the linkages, there are challenges associated with systematic linkages for both agricultural inputs and outputs. In this instance a weak market link exists at international, national and local level especially for small holder farmers. This needs to be strengthened to enable access by both producers and consumers. Existing market linkages were found to be input markets such as seed companies and input dealers while output markets comprised of direct buyers or buyers' agents. Moreover USAID found the catalysis' for market linkages such as access to financial services, training and capacity building and market information as lacking. Also findings by Kaganzi *et al.* (2008), indicate that linkages in Uganda are more effective when appropriate approaches are applied to empower small-holder farmers.

12. Important aspects of the policy and regulatory framework, including tenure

For the past twenty years Uganda has given attention to the development of policy and regulatory frameworks that focus on promoting an enabling environment for socio-economic development of its citizens in which important aspects of the policy include the following; health, employment, vulnerable populations, agriculture, natural resources, information and communication technology, youth empowerment, non-governmental organizations development partners at both national and local level, gender issues, climate change, social transformation and sustainable development, land distribution and urban development, minerals. In summary the policies and regulatory seek to be inclusive in their approach towards development, with considerations for universal access to education by both boys and girls, women's participation in development initiatives and lessen the burden of gender roles that disadvantage especially women's roles in socio-economic empowerment.

13. Major stakeholders

To achieve development indicators, the Republic of Uganda has partnerships and memberships with international organizations listed below;

Table 1: Major Stakeholders

African, Caribbean, and Pacific Group of States (ACP)	International Telecommunication Union (ITU)
African Development Bank Group (AfDB)	International Telecommunications Satellite Organization (ITSO)
African Union/United Nations Hybrid operation in Darfur (UNAMID)	International Trade Union Confederation (ITUC)
African Union (AU)	Inter-Parliamentary Union (IPU)
Common Market for Eastern and Southern Africa (COMESA)	Islamic Development Bank (IDB)
Commonwealth of Nations	Multilateral Investment Guarantee Agency (MIGA)
East African Community (EAC)	Nonaligned Movement (NAM)
East African Development Bank (EADB)	Organisation of Islamic Cooperation (OIC)
Food and Agriculture Organization (FAO)	Organization for the Prohibition of Chemical Weapons (OPCW)
	Permanent Court of Arbitration (PCA)

Group of 77 (G77)	United Nations (UN)
Inter-Governmental Authority on Development (IGAD)	United Nations Conference on Trade and Development (UNCTAD)
International Atomic Energy Agency (IAEA)	United Nations Educational, Scientific, and Cultural Organization (UNESCO)
International Bank for Reconstruction and Development (IBRD)	United Nations High Commissioner for Refugees (UNHCR)
International Civil Aviation Organization (ICAO)	United Nations Industrial Development Organization (Unido)
International Criminal Court (ICCt)	United Nations Mission in the Central African Republic and Chad (MINURCAT)
International Criminal Police Organization (Interpol)	United Nations Mission in the Sudan (UNMIS)
International Development Association (Okolo *et al.*)	United Nations Operation in Cote d'Ivoire (UNOCI)
International Federation of Red Cross and Red Crescent Societies (IFRCS)	Universal Postal Union (UPU)
International Finance Corporation (IFC)	World Customs Organization (WCO)
International Fund for Agricultural Development (Ifad)	World Federation of Trade Unions (WFTU)
International Labour Organization (ILO)	World Health Organization (WHO)
International Monetary Fund (IMF)	World Intellectual Property Organization (WIPO)
International Olympic Committee (IOC)	World Meteorological Organization (WMO)
International Organization for Migration (IOM)	World Tourism Organization (UNWTO)
International Organization for Standardization (ISO) (correspondent)	World Trade Organization (WTO)
International Red Cross and Red Crescent Movement (ICRM)	

Source: (Wikipedia, 2017), https://en.wikipedia.org/wiki/Outline_of_Uganda

14. Background information on the IFAD-host organization-Kenya

Kenya serves as the IFAD host organization; it hosts both the country office and the regional office for East and Southern Africa. IFAD operations at country level in Kenya began in 1978 and serves to help with interventions aimed at assisting the poor to overcome poverty

(IFAD, 2012). According to reports by several international partner development organizations the Republic of Kenya is located in East Africa and straddles the equator. Kenya has the biggest and most advanced economy in East Africa. It has an area of 582,646 sq km, of which 13,396 sq. km is water and 569,250 sq. km is land. It is bordered by Tanzania to the south, Uganda to the west, Sudan and Ethiopia to the north and Somalia to the east. The southeast coastline on the Indian Ocean has several natural harbours giving Kenya an economic advantage. According to KNBS (2009), the last census results indicated the population of Kenya to be at 38,610,097. In regard to the socio-economic status The World Bank (2016a) ranks the economic position of Kenya as that of a lower-middle income with a fluctuating GDP and high poverty rates affecting about 40% of the population. The World Bank further purports Kenya's economic growth environment as potentially sound due to the country's willingness to accommodate inclusive growth. The mainstay of Kenya's economic activities is diverse and range from tourism, transport and communications, manufacturing, trade and building construction, agriculture is also a major sector player in the Kenyan economy though has lately been crippled by climate change (OECD, 2006).

15. Conceptual framework of Field Practicum (Climate Smart Agriculture)

The concept of Climate Smart Agriculture (CSA), as defined and presented by (FAO, 2013) at the Hague Conference on Agriculture, Food Security and Climate Change in 2010, contributes to the achievement of the sustainable development goals. It integrates the three dimensions of sustainable development (economic, social and environmental) by jointly addressing food security and climate challenges. It is composed of three main pillars:

1. Sustainably increasing agricultural productivity and incomes;
2. Adapting and building resilience to climate change;
3. Reducing and/or removing greenhouse gases emissions, where possible.

FAO further elaborates on the conceptual framework's three main pillars as follows; that sustainably increasing agricultural productivity and incomes is necessary for food security to

ensure equity in food supply and its use especially for developing countries. Projections by FAO (FAO *et al.*, 2012) estimate that with population increase and more developments in cities especially in the developed world will hike food demand and cause an increase in food production and biofuels. The concept is of the view that without appropriate interventions Hardy's notion of the tragedy of the commons Hardin (1968) is inevitable in this scenario. The second pillar of the CSA concept is centred on adapting and building resilience to climate change, supported by empirical studies carried out in different parts of the world. FAO is of the view that climate change will call for adaptation measures at differing degrees depending on the projected impact of climate change. Due to climate change agricultural production is susceptible to adverse environmental changes such as long dry spells especially in the sub-tropical and tropical regions leading to depleted soil nutrients. Equally certain regions will have to succumb to the ordeal of detrimental pests infestations unless timely adequate measures are put in place.

The third pillar of the CSA concept as explained by FAO is reducing and/or removing greenhouse gases emissions (GHG), where possible. With the opinion that agricultural production systems have a considerable contribution to greenhouse gases emissions thereby contributing to climate change and its negative effects, targeting interventions that reduce GHG emissions is of importance to tackle climate change.

Table 2: Matrix providing a summary of Field Practicum Research Plan

TOPIC: Climate adaptation and mitigation needs of public officials across different governance levels (national, district, local) – focusing on mainstream government ministries, agencies and departments				
Objectives	**Problems and or questions to address**	**Methods to employ**	**Analysis to be carried out**	**Projected results**
General or Overall Objective To analyse the needs of different policy/decision makers across government sectors (district, local) affecting climate change adaptation and mitigation in Nwoya District Uganda.	What are the needs of different policy/decision makers across governance level (, district, local) influencing climate change adaptation and mitigation in Nwoya District Uganda?	Participatory tools and techniques for primary data collection, use of secondary sources of data to guide data collection.	Qualitative (content analysis) Quantitative (descriptive, univariate , bivariate analysis), mean, standard deviation etc	These results will lead to an overall understanding of issues affecting the needs of public officers to adapt and mitigate to climate issues.
Specific Objective 1 To establish the information, communication and technology dynamics that affect climate change adaptation and mitigation needs of different policy/decision makers across government sectors/levels (district, local) in Nwoya District Uganda.	What information, communication and technology dynamics affect climate change adaptation and mitigation needs of different policy/decision makers across government sectors (, district, and local) in Uganda?	Interviews (semi-structured), Focus group discussions, village and farm visits, field notes, observations, recordings etc	Qualitative (content analysis) Quantitative (descriptive, univariate , bivariate analysis) mean, standard deviation etc	Gain a deeper understanding of the encounters faced by public officers in climate adaptation and mitigation in regard to ICT.

Specific Objective 2 To analyse institutional factors affecting climate change adaptation and mitigation needs of different policy/decision makers across government sectors/levels (district, local) in Nwoya District Uganda.	What are the institutional factors affecting climate change adaptation and mitigation needs of different policy/decision makers across government sectors (district, local) in Nwoya District Uganda?	Interviews (semi-structured), Focus group discussions, , village and farm visits, field notes, observations, recordings etc.	Qualitative (content analysis) Quantitative (descriptive, univariate , bivariate analysis) mean, standard deviation etc.	. To comprehend public officials ability to synergise existing institutional structures.
Specific Objective 3 To determine systematic elements that affect climate change adaptation and mitigation needs of different policy/decision makers across government sectors/levels (district, local) in Nwoya District Uganda.	What systematic components affect climate change adaptation and mitigation needs of different policy/decision makers across government sectors/levels (district, local) in Nwoya District Uganda?	Interviews (semi-structured), Focus group discussions, , village and farm visits, field notes , observations, recordings etc.	Qualitative (content analysis) Quantitative (descriptive, univariate , bivariate analysis) mean, standard deviation etc.	Comprehend the existing components and how they relate to adaptation and mitigation needs of policy/decision makers.

Table 3: Field Practicum time-line

Activity	Date/Time
Departure - Botswana to Kenya (Sir Seretse Khama International Airport, Gaborone, Botswana)	**Thursday 10th August 2017**
Arrival – Kenya (Jomo Kenyatta International Airport, Nairobi, Kenya)	**Thursday 10th August 2017**
Introductions – Supervisors (CGIAR)	**Friday 11th August 2017**
Research proposal corrections	**Tuesday 14th – 31st August 2017**
Departure - Kenya to Uganda (Nwoya district).	**Friday 1st September 2017**
Arrival – Uganda (Nwoya district)	**Friday 1st September 2017**
Field Visits and data collection	**Monday 4th September 2017-Monday 18th September 2017**
Data entry and preparation of final research report.	**Tuesday 19th September 2017-Thursday 20th October 2017**
Presentation of preliminary results	**Monday 23rd October**
Final research report corrections	**Tuesday 24th October 2017-Thursday 5th November 2017**
Submission of final report	**Friday 6th November 2017**
Departure from Uganda (Nwoya District to Kenya	**Monday 9th November 2017**
Departure from Kenya (Jomo Kenyatta International Airport) to Gaborone	**Tuesday 10th November 2017**

16. Presentation of preliminary results

The presentation of the preliminary results will be done before the CGIAR team.

17. Potential challenges

Potential challenges may be a change and delay in time schedules of the field practicum due to practical constraints such as availability of the research participants and unforeseen administrative processes by the host organization such as re-schedule of times.

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