THE REPUBLIC OF UGANDA

Alebtong District

Hazard, Risk and Vulnerability Profile

2016

TABLE OF CONTENTS

LIST OF FIGURES

LIST OF TABLES

ACRONYMS

AU	African Union
CAO	Chief Administrative Officer
CDPC	City Disaster Policy Committee
CDMTC	City Disaster Management Technical Committee
CSOs	Civil Society Organizations
DDPMC	District Disaster Preparedness and Management Committee
DDPC	District Disaster Policy Committee
DECOC	District Emergency Coordination and Operations Centre
DRM	Disaster Risk Management
DRR	Disaster Risk Reduction
FGD	Focus Group Discussions
GIS	Geographical Information Systems
GoU	Government of Uganda
GPS	Global Positioning System
HFA	Hyogo Framework for Action
IDP	Internally Displaced Persons
IATC	Inter Agency Technical Committee
IGAD	Inter Governmental Authority on Development
IMPC	Inter Ministerial Policy Committee
IATC	Inter- Agency Technical Committee
IPCC	Inter- governmental Panel on Climate Change
LC	Local Council
MLHUD	Ministry of Land, Housing and Urban Development
MGLSD	Ministry of Gender, Labour and Social Development
MoLG	Ministry of Local Government
MS	Micro Soft
NAADS	National Agricultural Advisory Services
NARO	National Agricultural Research Organisation
NDPMC	National Disaster Preparedness Management Committee
NECOC	National Emergency Coordination and Operations Centre
NEMA	National Environment Management Authority
NFA	National Forest Authority

NGO	Non-Governmental Organizations
NIC	National Incident Commander
OPM	Office of the Prime Minister
OVC	Orphans and vulnerable Children
PEAP	Poverty Eradication Action Plan
SCDMC	Sub County Disaster Preparedness and Management Committee
UCC	Uganda Communication Commission
UN	United Nations
UPDF	Uganda People's Defense Forces
URA	Uganda Revenue Authority
UWA	Uganda Wildlife Authority
UNDAF	United Nations Development Assistance Framework
UNDP	United Nations Developments Programme
UNOCHA	United Nations Office for Co-ordination of Humanitarian Affairs
UXO's	Unexploded Ordinances
VDPMC	Village Disaster Preparedness and Management Committees

ACKNOWLEDGMENTS

On behalf of Office of the Prime Minister, I wish to express my sincere appreciation to all of the key stakeholders who provided their valuable inputs and support to this Multi-Hazard, Risk and Vulnerability mapping exercise that led to the production of comprehensive district Hazard, Risk and Vulnerability (HRV) profiles.

I extend my sincere thanks to the Department of Relief, Disaster Preparedness and Management, under the leadership of the Commissioner, Mr. Martin Owor, for the oversight and management of the entire exercise.

The HRV assessment team was led by Ms. Ahimbisibwe Catherine, Senior Disaster Preparedness Officer supported by Ogwang Jimmy, Disaster Preparedness Officer and the team of consultants (GIS/DRR specialists); Dr. Bernard Barasa, and Mr. Nsiimire Peter, who provided technical support.

Our gratitude goes to UNDP for providing funds to support the Hazard, Risk and Vulnerability Mapping. The team comprised of Mr. Steven Goldfinch – Disaster Risk Management Advisor, Mr. Gilbert Anguyo - Disaster Risk Reduction Analyst, and Mr. Ongom Alfred-Early Warning system Programmer.

My appreciation also goes to Alebtong District Team.

The entire body of stakeholders who in one way or another yielded valuable ideas and time to support the completion of this exercise.

Hon. Hilary O. Onek
Minister for Relief, Disaster Preparedness and Refugees

EXECUTIVE SUMMARY

This Alebtong District Hazard, Risk and Vulnerability Profile integrates scientific information provided by GoU agencies and hazard and vulnerability knowledge provided by communities on the district base map to contribute to a Uganda National disaster risk atlas. It will support planning and decision-making processes to manage disaster risk in the District.

The methodology provided for four phases of work:

Phase I:	Requirements analysis, work planning, team building, logistical arrangements
Phase II:	Stakeholder mapping, consultation, spatial data acquisition, secondary data assessment
Phase III:	Data cleaning, analysis and verification
Phase IV:	Dissemination workshop

The report characterizes the district in terms of location, geography, gender demographics by sub-county and livelihoods. The continental climate of the district is modified by the large swamp area surrounding other parts of the district. The rainfall in the district is bimodal with one peak during April-May and the other in August-October. The district has a population of 599,652, projected from the 2002 National housing and population census.

Alebtong district is vulnerable to ten endemic hazards, in order of high to low risk: prolonged dry spell, crop pests and diseases, environmental degradation, animal vectors and diseases, heavy storms, flooding, proliferation of invasive species, internal conflicts, and human epidemic.

The discussion of the nature of each hazard and its geographic extent in terms of sub-counties provides a qualitative assessment of the situations that the communities face. Maps corresponding to each hazard show the areas where the hazard is significant, and also hotspots as reported points of incidence of the hazard.

The district has a degree of cumulative vulnerability to hazards typical of its neighbours. Omoro, Aloi and Abako are the most vulnerable sub-counties with cumulative vulnerabilities of 19, 18 and 15 respectively and weighted vulnerabilities of 6, 6, and 5 respectively therefore are at medium level of vulnerability at the vulnerability scale. The rest of the sub-counties displayed low vulnerability with weighted vulnerability values well below 5.

Timely early warning systems and other DRR interventions would enhance the resilience of the people of Alebtong in their hazard and climate change situation.

INTRODUCTION

Alebtong District is vulnerable to ten hazards that lead frequently to disasters. They include flooding, prolonged dry spells, crop pests and diseases, animal vectors and diseases, internal conflicts, hailstorms/heavy storms and lightning, human epidemics, environmental degradation, bush fires and invasive crop species

The Alebtong District Local Government and the Department of Relief, Disaster Preparedness and Management in the Office of the Prime Minister (OPM), with the support of the United Nations Development Programme (UNDP), embarked on a process of mapping the hazards and analysing disaster risks and vulnerabilities in Alebtong district. The information contained in this District Hazard, Risk, and Vulnerability Profile will guide the adoption of disaster risk management (DRM) measures in the district and inform the development of the district's contingency and development plans.

Objectives

The objective of the hazard, risk, and vulnerability mapping exercise is to produce a District Profile that will aid planning and decision making processes in addressing disaster threats/ risks in Alebtong District.

Methodology

The multi hazard, risk and vulnerability mapping employed a people-centered, multi-sectoral, and multi-stakeholder approach. In generating the required information and production of the district profile, a mapping team led by the Office of the Prime Minister (OPM) and involving representatives from UNDP and district sector offices was deployed for a field mission to Lango region from 11th to 30thMay, 2014.

To collect field data, the team employed a variety of methods including use of a mix-scale approach involving the integration of primary and secondary data. The acquired secondary data through government sources (relevant ministries, departments and agencies, and district authorities in the Lango Sub-Region) and data bases from other organizations/NGOS operating in these districts. The raw spatial data and satellite images were assembled from relevant sources and analyzed with descriptive statistics and remote sensing technology.

The mapping exercise involved four phases as follows;
Phase I: Preliminary Activities

Phase II: Field Data Collection and Mapping

Phase III: Data Analysis and Map Production and Report Writing

Phase IV: Refining and Final Map Production/Reporting

Phase I: Preliminary Activities

The mapping team undertook a series of planning and programming activities before the start of field activity. These included meetings with relevant stakeholders, mobilization of required resources, acquisition of required equipment and materials, review of relevant literature, establishment of relevant contacts and preparation of a checklist of activities to be undertaken in Phase Two.

The main objectives of Phase One were to allow the mapping team to prepare and undertake a preliminary assessment of the quality and nature of the resources/materials, develop a quick understanding within the mapping team and by stakeholders of the task of the multi-hazard, risk, and vulnerability mapping before any detailed physical field work is undertaken. This phase enabled the scoping and adoption of specific mapping content/legend for the thematic maps.

This phase was also useful in preparing the resource deployment plan, and outlining procedure and field work plans. It articulated how various stakeholders would be consulted to ensure maximum participation in locating disaster prone locations and any other information relevant to the mapping exercise.

Phase II: Field Data Collection and Mapping

Stakeholder mapping and local meetings: The mapping team held an entry meeting in each district to facilitate capture of key local issues related to hazard occurrence and trends. The meeting gave an opportunity for the mapping team and stakeholders to identify other key resource persons and support staff in the local community for consultation.

Stakeholder Participation Practices: Stakeholder participation was a key component of the mapping exercise. The mapping team consulted district technical sector heads, usually members of the District Disaster Management Committee (DDMC), and involved them in the ground-truthing exercises to ensure district leadership and ownership of the data and results. They gave stakeholders, particularly those at district level, the opportunity to validate and update the data and observations and also add any other relevant information relevant to the mapping process.

Capture of spatial data: The mapping team acquired spatial data and digital base maps at appropriate scales. The base maps contained relevant data including terrain, district and sub-county boundaries, forest reserves, national parks, roads, rivers, streams, water bodies and wetlands, and the locations of infrastructure, services and settlements.

Secondary data and desk research: The mapping team reviewed relevant documents at the district and other umbrella organizations including policy and legal documents, and existing maps, reports and studies. They used a checklist which summarizes the information required for each of the various risk indicators being mapped.

Critical observation and ground truthing: To critically assess the conditions, nature and location of hazard prone zones, “current human activity” and settlement patterns in hazard prone areas, the team visited infrastructure elements, observed principal household economic activities and spot-checked the locations of watershed features. They took the locations of hazard instances using a GPS receiver or Google Earth coordinates and used satellite imagery to validate and extend map features.

Main instruments of data collection: The main tools for data collection were guide books, key informant guides and notebooks, GPS receivers, digital camera, document scanner, and topographic sheets of the mapping areas.

Exit and feedback meetings with stakeholders: After field activities and data collection, the mapping team met with stakeholders at the district centre to validate the data, get additional information if necessary, and provide clarity about the expected outputs and way forward.

Phase III: Data Analysis and Verification

Analysis of collected data: The mapping team and district local government officials analyzed the collected data. They applied thematic layers and hazard incident points to the base maps to develop the hazard, risk and vulnerability maps. The main activities in this phase include:

Data entry, cleaning and coding
Preparation of base maps and process maps
Preparation of disaster risk and vulnerability maps

Methods used for data analysis: Data analysis methods used are the following:
Geo-processing, data transformation and geo-referencing

Discussions/FGDs

Drafting, digitizing and GIS overlays

Compiling data and information

Data editing, coding and cleaning: The mapping team used the various tools mentioned above for editing, coding, and cleaning. They entered the qualitative and quantitative data obtained from the field via a data entry interface customized to the layout of the field data forms. Data coding and analysis started soon after information was secured from the field. Arrangements were made in the field to handle manual editing and coding as and when data are received from the field crew. Furthermore, data entry, verification, screens editing and system development followed sequentially to enable the preparation of draft maps.

Data analysis package: After data were secured, they were analysed by the mapping team using MS Office software (MS Word, MS Excel for Windows). Spatial data were analysed using ArcGIS software and mobile GIS applications. Rapid and systematic GIS overlays were performed to generate base maps and risk and vulnerability maps.

Descriptive statistics: the mapping team investigated trends per given indicator using tables, graphs, charts and frequencies. As processing of data developed, it was integrated for production of thematic maps for the different types of hazards.

Generation and appraisal of draft Maps: Thematic maps for the different hazards were developed based on the prioritization set by the districts. These risk and vulnerability maps were presented and validated appraised in a field workshop based on the accuracy and completeness of the information. Missing information gaps were identified and incorporated in the final risk and vulnerability maps.

Phase IV: Verification Workshop

OPM staff led a final workshop to facilitate dissemination of the district hazard, risk, and vulnerability profile to relevant partners.

Overview of Alebtong District

Location

Alebtong District is located in Lango sub-region in Northern Uganda and is bordered by the districts of Otuke, Lira, Amuria and Dokolo Physically, the district lies between: 02 18N, 33 18E geographical coordinates.

The district covers approximately a total area of 1819.95.

Table 1: Alebtong District Area Size in Km by Sub County

No.	Sub-county	Area size (km^2)
1	Aloi	408.7
2	Akura (new)	
3	Omoro	531.36
4	Amugu	193.41
5	Apala	351.31
6	Abia (new)	
7	Abako	335.17
8	Awei (new)	
9	Alebtong town council	
	TOTAL	1819.95

Administrative and Local Government Units

The district is composed of the following number of administrative units:

Counties = 2 counties and 1 Town council
Sub-counties = 8 sub counties
Parishes = 45
Villages = 608

Geology and Soils
The basement complex (mainly undifferentiated acid gneiss) geological formation covers most of the district.

Climate
The otherwise continental climate of the district is modified by the large swamp area surrounding other parts of the district. The rainfall in the district is bimodal with one peak during April-May and the other in August-October.

The average annual rainfall in the district varies between 800-1400 mm decreasing northwards. The rainfall is mainly convectional and normally comes in the afternoons and evenings.

The average minimum and maximum temperatures are 22.5^0C and 28^0C, respectively. Absolute maximum temperature hardly goes beyond 36^0C, and absolute minimum hardly falls below 20^0C.

The Equatorial Trough which brings rainfall passes over the district. The South easterly which also brings rains to the district passes over Alebtong. Land and sea breezes are common in the district. Wind run is low (1-4m/sec) during the rainy season and moderate (4-8m/sec) during the dry season.

Historical Background
Alebtong District which was subdivided from Lira District in 2010 is mainly occupied by Langi and a few Kumam and Iteso in the sub-counties of Omoro, Abako and Amugu. Alebtong District shares borders with Amuria, Lira, Dokolo, Amuria and Otuke Districts.

The Langi originated in Abyssinia, Ethiopia. They are considered to be part of the Nilo-Hamites (also known as semi-Hamitic) group which includes the Teso, Kumam, Jie and Karamojong tribes. The Langi, in contrast of their fellows, have adopted the simpler Nilotic tongue. Historians believe that their move from the north into their present habitat took place between the years 1800-1890 approximately.

Apart from times of wars, when some cohesion was achieved under one or two war leaders, the Langi, before the advent of British Administration in 1889, were divided into many small groups or clans each with its own leader. Generally the British effected a peaceful colonization. Administration in the early days was in the hands of Buganda agents.

The present district headquarters at Alebtong was the county headquarters for Moroto County under the then Lira District and the boundaries of the district were drawn using the sub-counties that fell within Moroto County.

Economic Background

Production System

Agriculture is the main economic activity in Alebtong district with over 80% of the population engaged in subsistence farming.

The major crops grown in the district are simsim, millet, sorghum, soya beans, pigeon, pea cassava, ground nuts, maize, sunflower and beans.
Cattle are a big source of wealth but this has been eroded by cattle rustling and the LRA war during 1987-2006 which virtually extirpated the livestock. With the improved security situation since 2008 the livestock population in the District is returning but Karamojong cattle rustlers are still a threat.

Poverty profile of the District

Income levels

Poverty levels are high in Alebtong, with about 85% of the population living below the poverty line (hard core poor). Escalation of the LRA war which displaced people in IDP camps from late 2002 to December 2006 increased poverty levels. The average household income declined from UGX 170,000 per annum in 2002 to an estimated UGX 110,000 per annum in 2008

Demography

The 2002 National Housing and Population Census, projected to 2012, recorded that the district had a population of 215,336. Table 2 disaggregates the 2012 population by gender at sub-county level.

Table 2: Projected 2012 Population of Alebtong District By Sub County

No.	District/Sub – county	Male	Female	Total
1	Abako	25661	26,910	52,571
2	Awei (new)			
3	Apala	19,300	20,500	39,800
4	Abita (new)			
5	Aloi	28,000	30,000	58,000
6	Akura (new)			
7	Amugo	12,091	15,174	27,265
8	Omoro	18,400	19,300	37,700
9	Alebtong Town Council			
	TOTAL	**103,452**	**111,884**	**215,336**

Livelihoods

Table 3: Main sources of household livelihood

Livelihood	Percentage involved
Subsistence Farming	97
Commercial farming	0.5
Others	2.5

Women's livelihoods

Both men and women participate in crop production, but the role of women is much greater than that of men, (70% more than men) especially in weeding, processing and storage. In general women take little part in decision-making at the household level, a domain almost entirely controlled by men. Gender mainstreaming is expected to increase production and productivity, guiding farmers to higher profit by also reducing crop losses in the field and post-harvest.

Women and youth play an important role in animal production. Women increasingly participate in production workshops, partly because the District Community Development Department, NGOs and the Department of Production have aimed to increase the participation of women and youth in workshops and other extension activities.

Women participate in bee keeping, harvesting honey and processing it, but have little influence in marketing and decisions about the use of funds accruing from sales.

Women are involved in small market-based enterprises such as sale of fresh farm produce, fish, making and sale of garments, and some processed farm products like flour, pottery and handcraft. There is a need to mobilize women and empower them to own, control and manage enterprises. Activities and budgets should be drawn affirmatively in this direction. The main commercial fish species farmed in the district are Tilapia niloticus and Clarius gariepinus. Both species grow to about 350gm and 700gm respectively within a period of 7 months under polyculture farming practices. The district is encouraging commercial aquaculture with support from MAAIF/ADB.

Participation of women in this sub-sector is high. Women are involved in construction of fish ponds, feeding and marketing but men mostly dictate how to spend the proceeds from fish sales. An initiative of NAADS seeks to ensure that at least a third of the registered members of each fish-farmer group are women. Groups with a majority of women are more successful and active.

HAZARDS

Table 4: Hazard status

Hazard	Status	Sub County
Prolonged dry spell	Widespread in the region	All Sub Counties
Animal Pests and Diseases	Instances of African swine fever reported	Amugu
		Abako
	Instances of foot and mouth disease reported	Abako
		Amugu Amoro
	Instances of new castle disease among chicken reported	All Sub Counties
	Liver flukes	
	Rabies	Aloi
		Akura
	Tsetse flies	Amugu
		Abako
		Aloi
		Akura
		Apala
		Abia

Crop Pests and Diseases	Instances of cassava brown streak disease reported	Aloi
		Amugu
		Abako
		Apala
	Banana Bacteria Wilt	Amugu Akura Apala
	Instances of citrus Cangkas reported	Amugu
	Instances of fruit flies reported	All sub counties
	Cassava Mosaic	All sub counties
	Instances of caterpillars affecting soya beans reported	All sub counties
	Bores in cereals	All Sub Counties
Environment Degradation	Instances of wetland, encroachment, sand mining, deforestation, stone quarrying and over grazing	Amugu Abia Apala Akura Aloi Alebtong T/C Abako Omoro
Flooding	Instances reported	Abia
		Apala
		Aloi
		Omoro
		Abako
		Awei
		Akura

Heavy Storms	Instances of hailstorm, strong winds reported	Akura
		Aloi
		Awei
		Omoro
		Apala
		Akura
		Abako
	Instances of lightning reported	Omoro
		Abako
		Akura
Human Epidemic	Instances of sleeping sickness	Aloi
		Akura
Internal Conflicts	Instances of land disputes and domestic violence reported	Omoro Aloi
Proliferation of Invasive weed Species	Instances of striga amonthica reported	Akura
		Abako
		Awei
Bush fires	Instances of massive fires during dry seasons	Abia
		Aloi
		Omoro

Table 4 displays the status and summarizes the nature of hazards in the district and provides the locations of instances.

Table 5: Summary of Hazards by Sub County

Sub County	Prolonged dry spell	Animal Vectors and diseases	Crop pest and diseases	Environmental degradation	Flooding	Heavy storms	Human epidemic	Internal conflicts	Proliferation of Invasive weed spices	Bush fires	Vulnerability to Agg. risk/disaster
Aloi	✓	✓	✓	✓	✓	✓	✓	✓		✓	9
Omoro	✓	✓	✓	✓	✓	✓		✓	✓	✓	9
Akura	✓	✓	✓		✓	✓	✓		✓		7
Abako	✓	✓	✓	✓	✓	✓			✓		7
Abia	✓	✓	✓	✓	✓					✓	6
Apala	✓	✓	✓	✓	✓	✓					6
Awei	✓	✓	✓		✓	✓			✓		6
Amugu	✓	✓	✓	✓				✓	✓		6
Alebtong T/C	✓	✓	✓	✓							4
Total	**9**	**9**	**9**	**7**	**7**	**6**	**2**	**3**	**5**	**3**	**60**

Table 5 provides another view of the relative significance of hazards. The right most column is ordered by the number of hazards endemic in each sub-county, and is a measure of compound vulnerability. The bottom row is ordered by the number of sub-counties that experience each hazard, giving an indication of its geographic prevalence.

Table 6 below ranks the hazards in their order of area of the district covered by its occurrence, frequency and magnitude. Their ranking reflects the perception of stakeholders of the relative severity of the corresponding impacts on them.

Table 6: Ranking of hazards

S/ No.	Hazard	Frequency (Most Freq=3, Freq=2,Not Freq=1)	Area (No. of sub counties) affected >10=5, 8-10=4, 5-7=3, 2-4=2, <2=1	Magnitude (High=3, Medium=2, Low=1)	Total (Sum of Columns 3,4 & 5)	Rank (Ascending order)
1	Animal Diseases (BQ, CBPP, F&MD)	3	4	3	10	1
2	Crop pests & Disease	3	4	3	10	2
3	Environmental Degradation (Deforestation, wet land degradation, overgrazing)	3	3	3	9	3
4	Prolonged dry spell	3	3	3	9	4
5	Heavy Storms	3	3	3	9	5
6	Wild bush fires	3	2	2	7	6
7	Floods/water logging	2	3	2	7	7
8	Internal Conflicts	3	2	2	7	8
9	Human Epidemics	2	2	2	6	9
10	Invasion Species	1	3	3	3	10

Hazard Risk Assessment

Table 7 expresses the communities' assessment of severity and likelihood of risk in their respective sub-counties. Each of the columns under the hazards in table 7 below translates into respective hazard risk maps in the following section. The colours red, yellow, and green showing the severity of the hazard risk in the table are also reflected in the corresponding maps.

Table 7: Hazard risk assessment

Sub County	Hazards									
	Prolonged dry spell	Animal Vectors and diseases	Crop pest and diseases	Environmental degradation	Flooding	Heavy storms	Human epidemic	Internal conflicts	Proliferation of Invasive weed Species	Bush fires
Aloi	L	M	M	H	M	H	L	L	N	H
Omoro	H	L	M	H	H	M	N	L	L	H
Akura	L	L	M	N	L	H	L	N	L	N
Abako	M	H	M	H	L	H	N	N	L	N
Abia	H	L	M	L	H	N	N	N	N	H
Apala	H	L	M	H	L	L	N	N	N	N
Awei	L	L	M	N	M	H	N	N	L	N
Amugu	L	H	M	M	N	N	N	L	L	N
Alebtong T/C	H	H	M	L	N	N	N	N	N	N

Key: H = High, M = Medium, L = Low, N = Not reported

RISKS

Prolonged Dry Spells

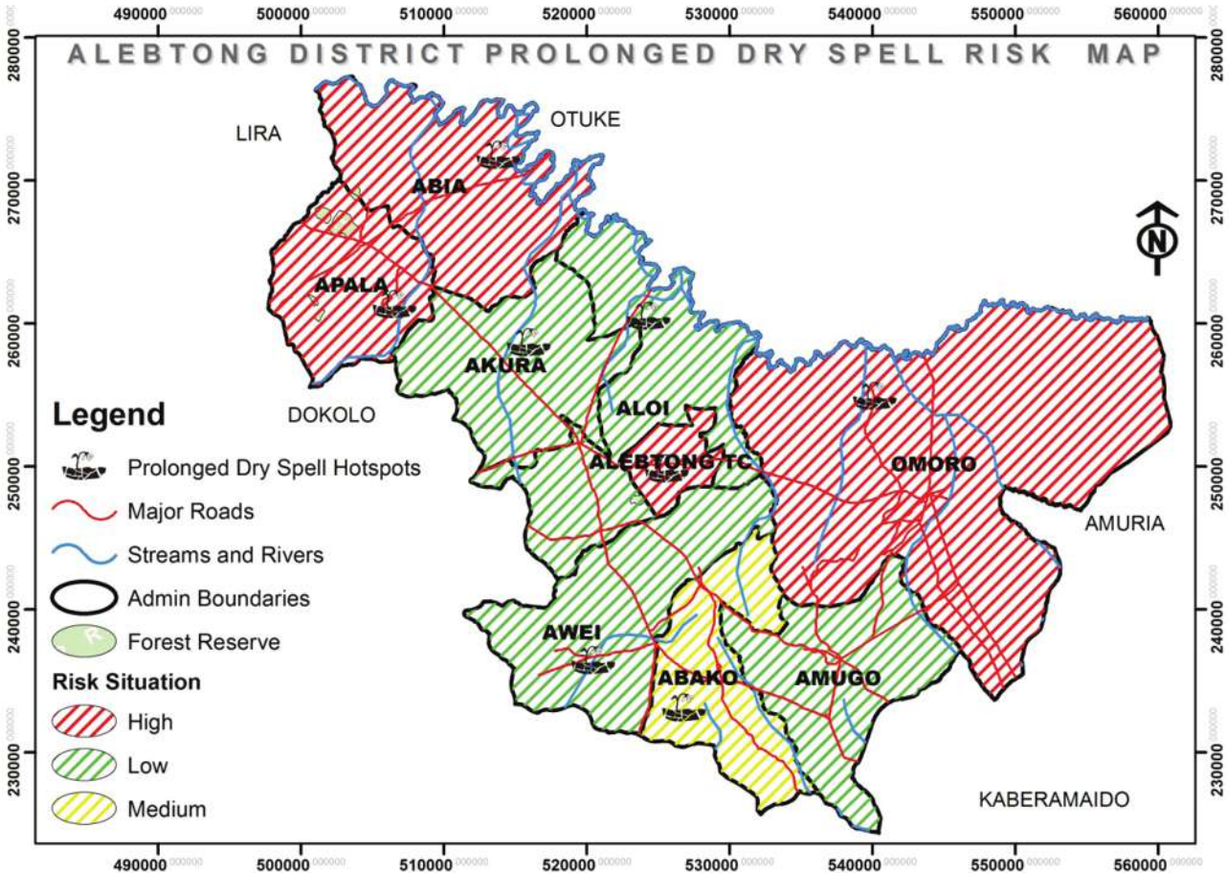

Figure 1: Prolonged Dry Spell Risk Map
Source: Field Data Collected by OPM (May, 2014)

Figure 1 above presents the prolonged dry spell risk status of Alebtong District. The Prolonged dry spells occur due to normal climate variability and, more severely and/or frequently, due to climate change. Since in Alebtong district crop farming is exclusively rain fed, water-intensive crops fail in prolonged dry spells, leading to food shortage and income losses. Poor agricultural practices such as bush burning encourage excessive soil moisture loss. Some of these changes are induced by anthropogenic activities like deforestation, wetland reclamation, and all these factors contribute to crop failures, food shortages and malnutrition in infants.

The communities in the sub-counties of Omoro, Apala, Abia and Alebtong Town Council are prone to high risk of prolonged dry spell; those in Abako Sub County are prone to moderate risk of prolonged dry spell; while those in Akura, Aloi, Awei and Amugo are prone to low risk of prolonged dry spell.

The most recent one is the prolonged dry spell from the month of March 2014 to the end of April 2014. This affected many farmers across the district due to withering of food security crops like beans, cassava, maize and pigeon peas. These crops failed so the poor farmers had to look for seeds for replanting in addition to looking for the daily meal.

The prolonged dry spell resulted in late planting of crops, compounding food shortage among peasants, incapacitating the communities from participating in the local economic development, lowering the nutritional status, which results in increased illness and death among children.

Animal Vector and Diseases

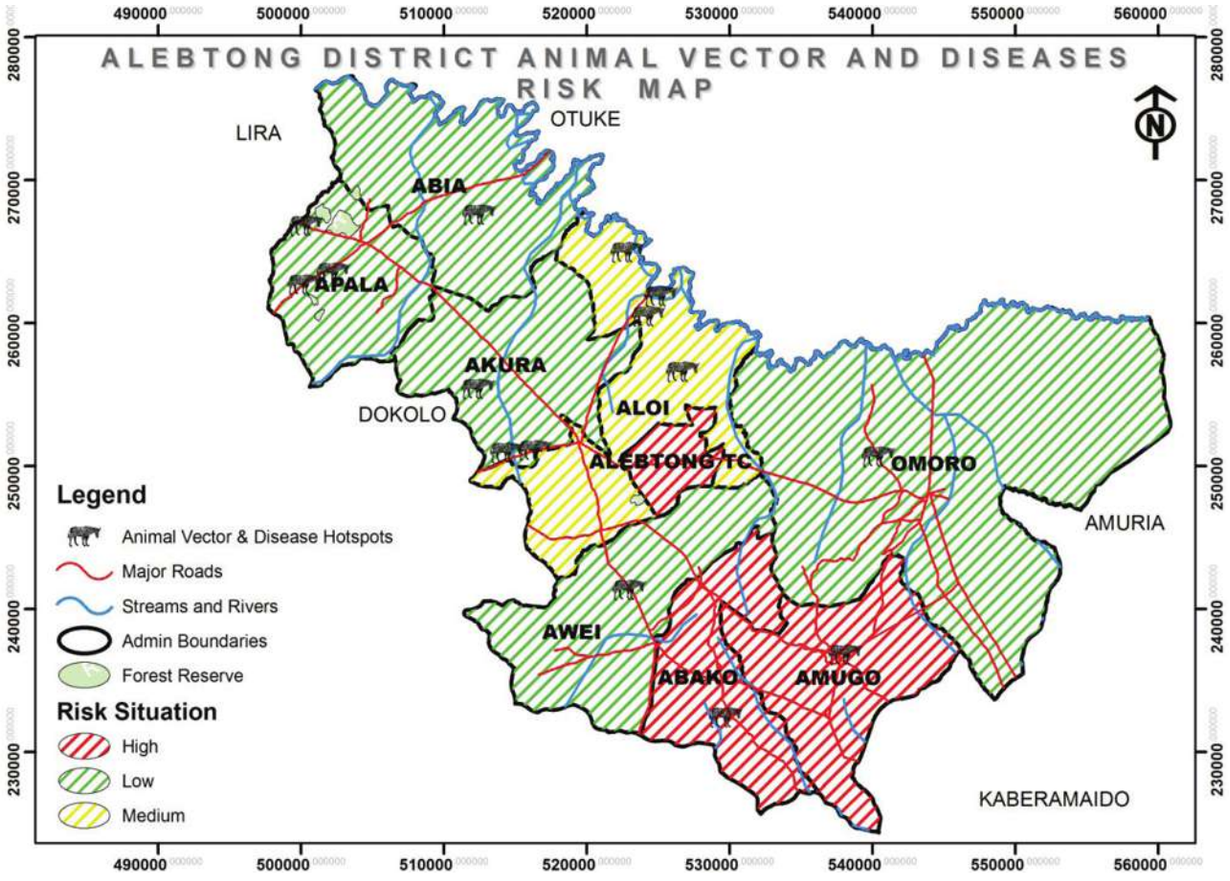

Figure 2: Animal Vectors and Diseases Risk Map
Source: Field Data Collected by OPM (May, 2014)

Figure 2 above depicts the risk status for animal vector and disease in Alebtong District. The hazard which is prevalent all the sub counties of the district subjects varied risks on different sub counties. The communities in Alebtong Town Council together with those in Abako and Amugo sub counties are prone to high risk; those in Aloi are prone to moderate risk while the rest of the sub counties are prone to low risk of the hazard.

Decreased animal health, reduced livestock numbers and a decline in the number of farmers engaged in livestock rearing has been attributed to increased incidence of African swine fever, foot and mouth disease, newcastle disease, liver flukes, tsetse flies, rabies and tick borne diseases, as well as inadequate or lack of animal health kits to facilitate effective service delivery. Production capacity at the household level has been lowered considerably.

Dominant are the tsetse species while the other vectors are the nuisance-biting flies. The distribution of the vectors is wide and covers the whole district with varying densities; highly infested areas include river Moroto and other small swamps.

The tsetse fly population is on high increase and is more per- domestic as a result of the dense vegetation and the low level of control activities.

The movements of cattle and humans during insecurity have caused the spread of trypanosomiasis across boundaries. Animal trypanosomiasis as a constraint to livestock productivity in the district has been common. Human trypanosomiasis was confirmed in Aloi sub-county and with the current high fly densities in the district; trypanosomiasis remains a big threat more especially in the parishes of Otweotoke, Arwotokwero, Tebung adwong and Tebung atidi – Akura sub County.

Crop Pests and Diseases

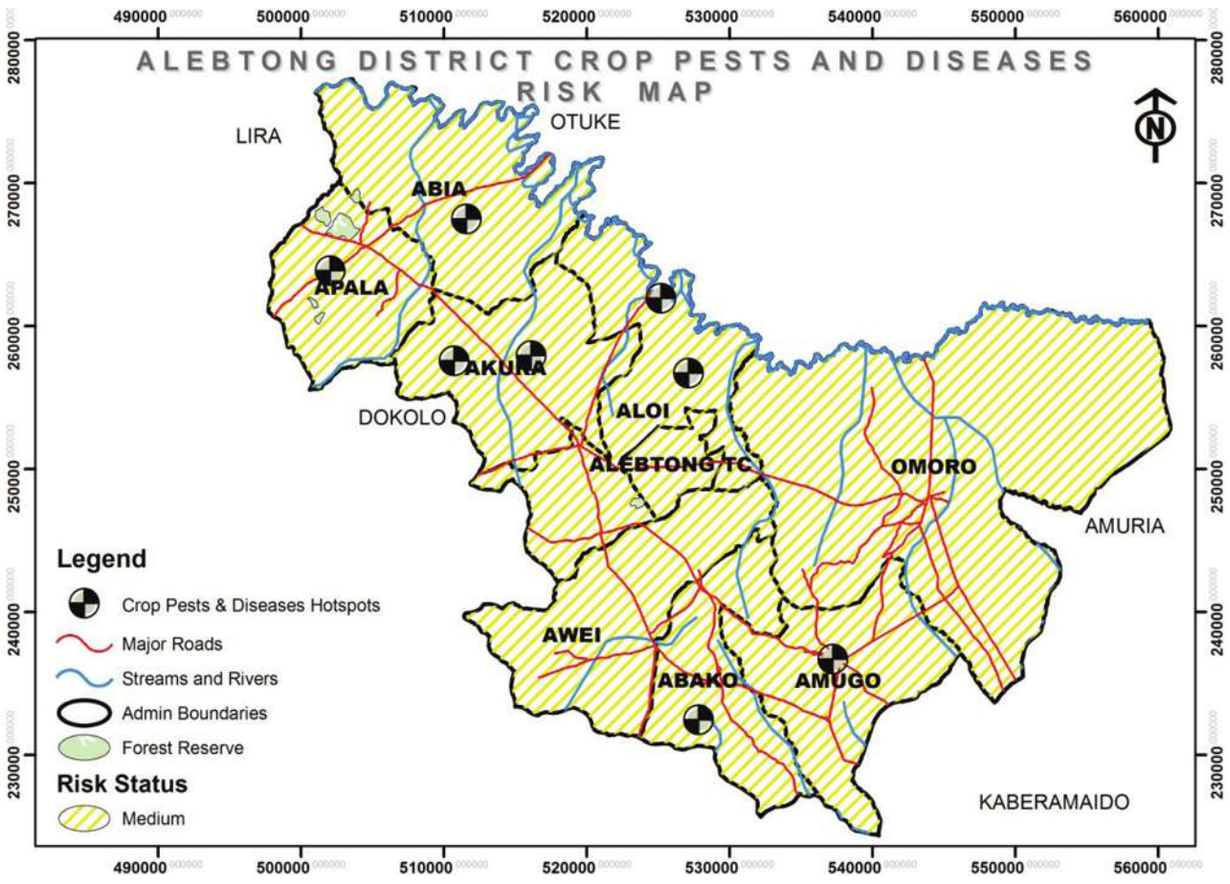

Figure 3: Crop Pests and Diseases Risk Map
Source: Field Data Collected by OPM (May, 2014)

Figure 3 above presents the crop pests and diseases risk status of Alebtong Distict. The communities of all the sub counties and Town Council of Alebtong district are all prone to moderate risk of crop pests and diseases. Crop farming is a source of food, income, employment and raw materials for rural and urban industrialization. It has great potential to contribute to the economic growth and development of Alebtong. Incidences of cassava brown streak disease, cassava mosaic and citrus canker have been reported in the sub-counties of Aloi, Amugo, Apala, Abako and Akura resulting in reduced food productivity, low income and threats of food insecurity to the small holder farmers.

Currently, Cassava Brown Streak Disease (CBSD) and Cassava Mosaic Disease are the major factors limiting cassava production in Alebtong district - causing over 60% yield loss. The disease has its main impact on food security because the severity of root necrosis increases with the length of time the crop is in the ground. Common cassava varieties grown in the zone are susceptible making CBSD a major cause of declining cassava production in most parts of Northern Uganda.

Floods

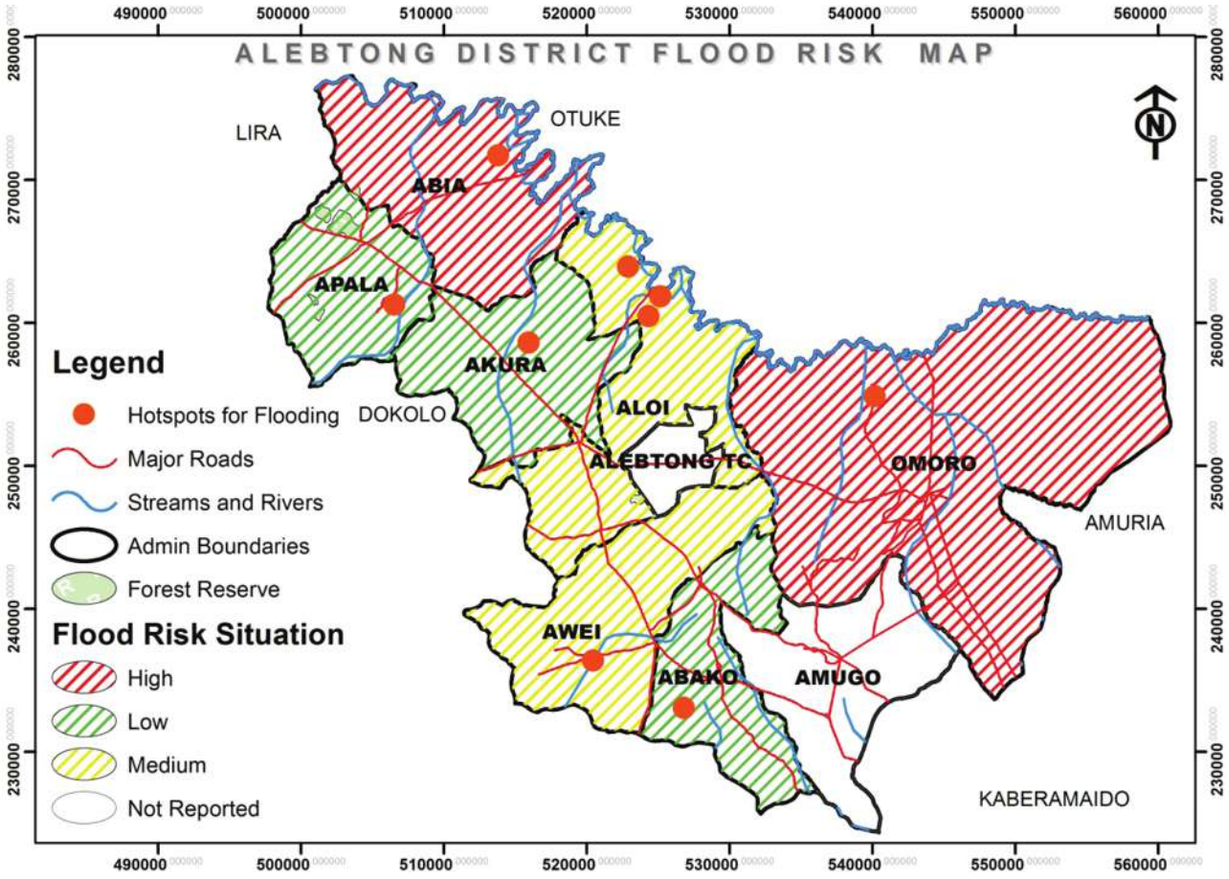

Figure 4: Flood Risk Map
Source: Field Data Collected by OPM (May, 2014)

Figure 4 above presents the risk status of floods in Alebtong District. The communities of Abia and Omoro sub counties are prone to high risk of floods; those of Aloi and Awei sub counties are prone to moderate risk while Apala, Akura and Abako sub counties are prone to low risks of floods. The people of Alebtong TC and Amugo SC are not prone to the risk of floods at all. Rainfall in the district is bimodal with one peak during April-May and the other in August-October. The average annual rainfall in the district varies between 1200-1600 mm decreasing northwards.

Heavy rains result from changes in climate induced by anthropogenic activities like deforestation, wetland reclamation, and poor agricultural practices (which encourage excessive soil moisture loss) The Water – flushes of volume of water, from River Moroto and large swamp area surrounding other parts of the district causing a lot of damage by washing away structures, crops and even animals causalities and death may occur from drowning.

In addition to the above, floods are followed by the outbreak of the diseases such as cholera, malaria and viral infections. Wells and ground water points are contaminated thus resulting in scarcity of clean and fresh water for communities.

The latest episodes in Alebtong occurred in the year 2012-2013 when water overflowed the banks of River Moroto and major wetlands in the district and a bridge on the main road to Adwari was broken hindering movement. It was most pronounced 2012-2013 in the sub counties of Omoro, Akura, Aloi, Apala and Abia which called for support of food items provided by the Office of the Prime Minister to the affected sub-counties.

Heavy Storm and Lightning

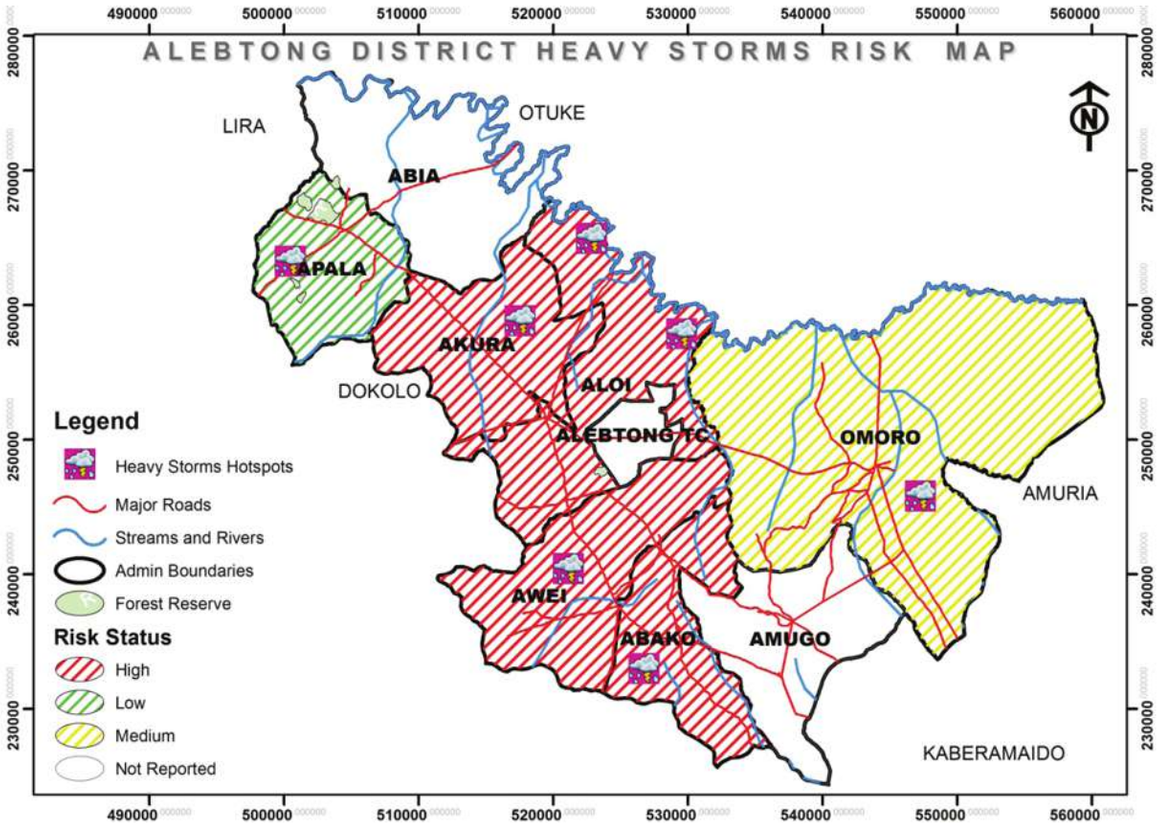

Figure 5: Heavy Storm and Lightning Risk Map
Source: Field Data Collected by OPM (May, 2014)

Figure 5 above shows the hazard risk status of heavy storms in Alebtong District. The communities of Akura, Aloi, Awei and Abako Sub Counties are prone to high risks of heavy storms and lightning; those of Omoro Sub County are prone to moderate risk of the hazard; while Apala Sub County has low risk of heavy storms and lightning. Abia, Amogo sub counties together with Alebtong TC are not prone to the risk of heavy storms.

The severe hail storm that hit Alebtong October 3rd 2013 affected the sub-counties of Awei, Omoro, Apala, Abako, Aloi, and Akura.10 parishes and 15 villages were stripped of major crops and 4 houses had their roofs blown off. Approximately 400,000 crop acres were damaged, with at least 10 percent of this acreage receiving around 100 percent yield loss. This is according to a report from Lc1's of the affected villages and assessment of the sampled areas by the Ag District Agricultural Officer-Alebtong.

Hailstorm normally occurs at the onset of rains, when most farmers have planted the little seed they had reserved for the season and left with few options. Crops like cassava, maize, soya bean, sorghum, cotton, potatoes, beans and simsim have always been destroyed which eventually results in food shortage, destruction of properties, deaths of animals and shortage of pastures.

Human Epidemic

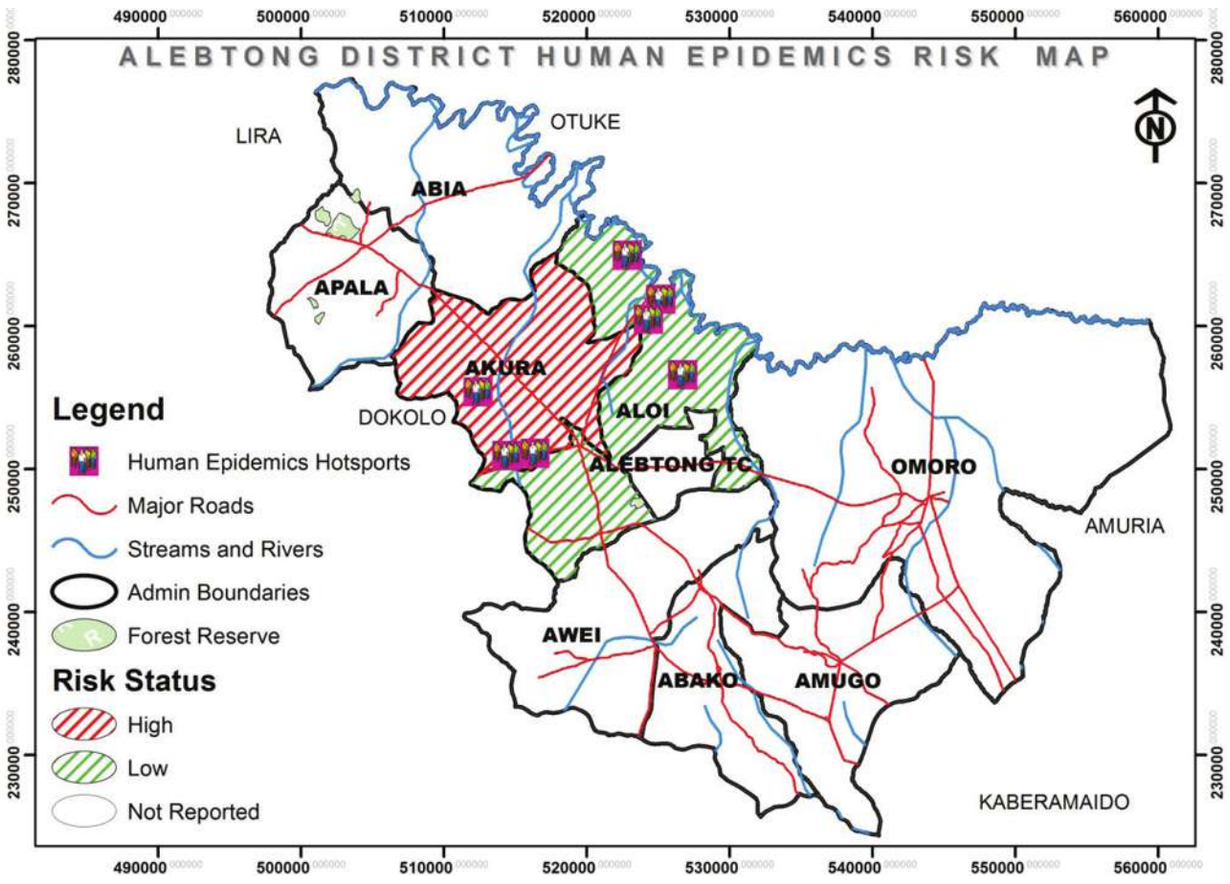

Figure 6: Human Epidemic Risk Map
Source: Field Data Collected by OPM (May, 2014)

Figure 6 above shows the risk status of human epidemics in Alebtong District. The communities of Akura Sub County are prone to high risk while those of Aloi Sub County are prone to low risk of the hazard. The rest of the sub counties are not prone to the risk of human epidemics.

The main burden of disease in Alebtong district (Alebtong Health Center IV report) is due to preventable causes. Sleeping sickness in humans is predominant. It is caused by the tsetse fly and is common in communities along river Moroto.

While poverty continues to be the chief underlying cause of poor health in Alebtong district; associated factors include low level of literacy especially among women at 51.9% (male 82%); emergence of diseases of lifestyles and other social services; this resulted in reduced labour for production, Low productivity, and Low level of income and eventually loss of social network.

Internal Conflict

Figure 7: Internal Conflict Risk Map
Source: Field Data Collected by OPM (May, 2014)

Figure 7 above depicts the risk status of internal conflicts in Alebtong District. Internal conflicts in Alebtong district are mainly about ownership of land and access to and use of communal resources like wet lands and water points. The communities of Aloi, Omoro and Amugu sub counties are prone to low risk of internal conflicts while nthe rest of the district is not prone to internal conflicts.

The long civil war in the North resulted into mass population displacement and the creation of IDP camps. After the war, IDP returnees came to realize that while they were away their land had either been encroached upon or possessed by neighbors, non-inhabitants or even relatives – resulting into sometimes bloody conflicts over land.

Competition for the access, use and control of communal resources such as wetlands, communal grazing lands and forest reserves together with the ever increasing population and poverty levels have also greatly contributed towards internal conflict which bred disaggregation of communities, temporary displacement and diminishing of social network. Most cases have been reported in the sub-counties of Aloi, Amugu, Omoro and border of Amugu - Teso sub-region; in the latter case, the RDC and CAO had to intervene last year (2013).

Environmental Degradation

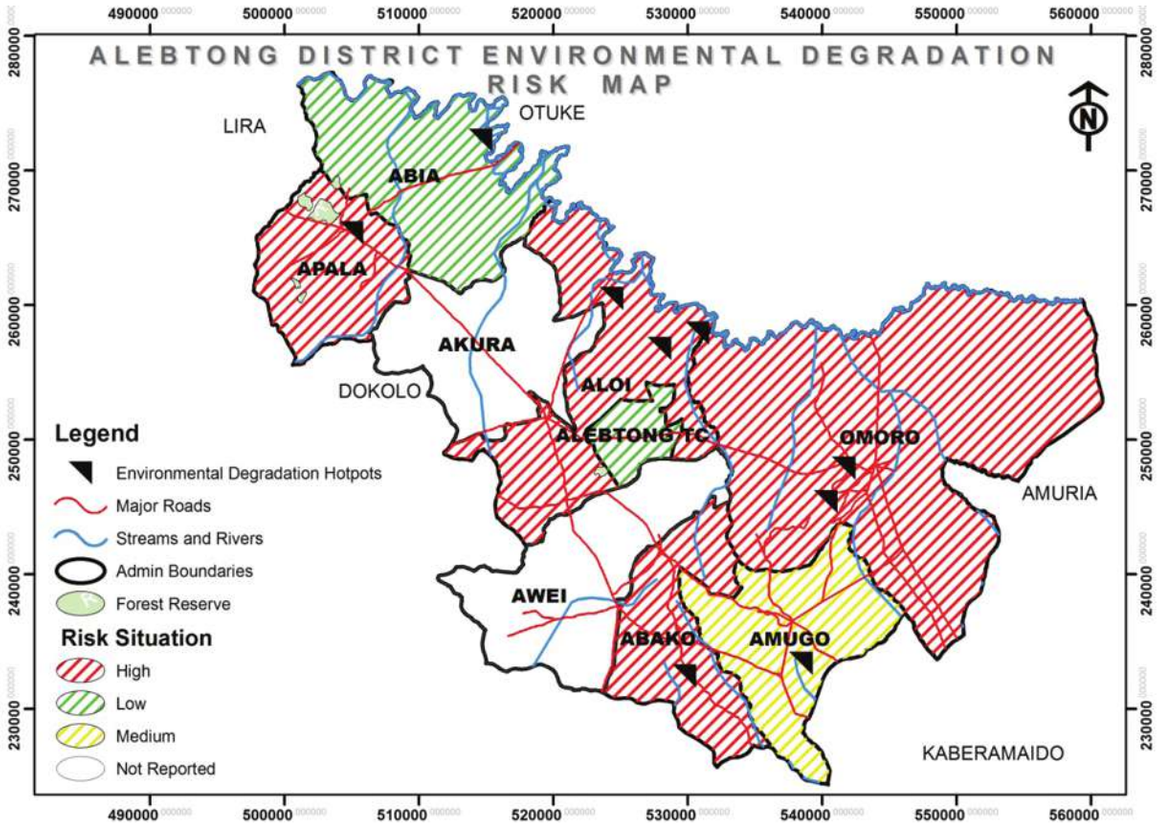

Figure 8: Environmental Degradation Risk Map
Source: Field Data Collected by OPM (May, 2014)

Figure 8 above portrays the risk status of environmental degradation in Alebtong District. The communities of Apala, Aloi, Omoro, and Abako sub counties are prone to high risk of environmental degradation; those of Amugo are prone to moderate risk to the hazard; while Abia SC and Alebtong TC are prone to low risk of environmental degradation. The people of Akura and Awei are not prone to the risk of environmental degradation at all.

There is a tremendous reduction in forest cover due to inconsiderate felling of trees which has taken place over the years to open land for cultivation, construction of dwellings and worst of all, charcoal burning in the sub-counties of Aloi, Amugu, Omoro, Abia, Apala and Abako.

Owing to this mass loss of vegetative cover, soils have become less productive as the fertile top soil is readily carried away by the forces of wind and water. Ultimately crop yields have drastically declined increasing the potential for food insecurity. All this is made more detrimental by the fact that present farming practices employed by the majority of farmers in the district are not environmentally sound, e.g. bush – burning, total land clearance as opposed to agroforestry, maximum tillage which highly disturbs the soil and non – observance of a fallow period.

Wetland degradation increases the risk of flooding which in turn increases the risk of water borne diseases and food insecurity; hinders movement, transportation of goods and access to services; leads to increased food prices; damages infrastructure such as roads and bridges. Wetland degradation further leads to increased water stress during the dry season and in the long term it results in the drying up of springs, boreholes and wells.

Insecurity and abject poverty has made people to turn to the natural resources use for survival without the concern for conservation. As a result of this especially the poorer and weaker people in the communities bear the negative impact of the quality of environmental deterioration on their livelihood, health and other aspects of lives.

Environmental degradation has many times also lead to internal conflict between those who are practicing sustainable use and those who are harvesting/utilizing resources indiscriminately.

Invasive Weed Species

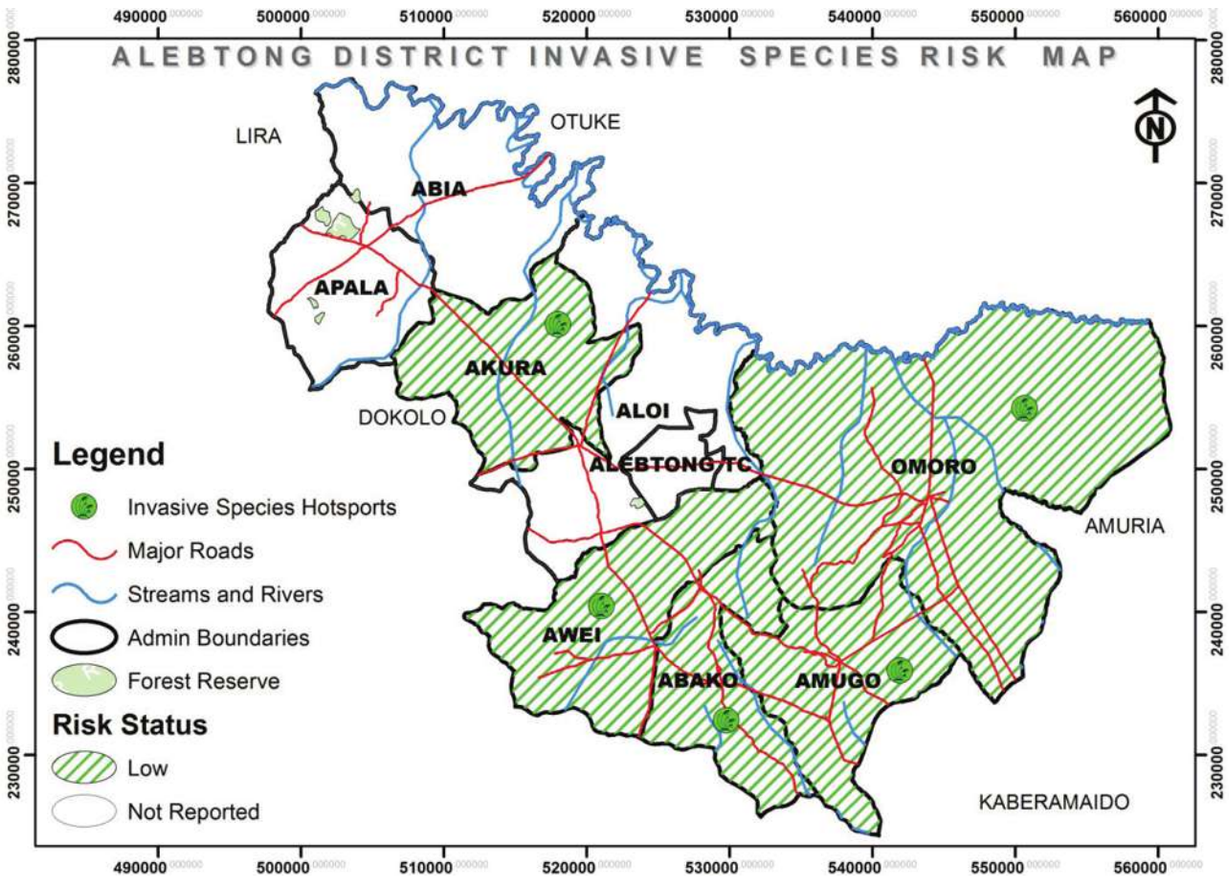

Figure 9: Invasive Weed Species Risk Map
Source: Field Data Collected by OPM (May, 2014)

Figure 9 above shows the risk status of invasive weed species in Alebtong District. The communities of Akura, Awei, Abako, Amugo and Omoro are prone to low risk of invasive weed species, while the rest of the district is not prone to any risk of invasive weed species. Incidences of Striga weed (Witch weed) have been reported in Akura sub-county. Striga has so completely adapted to life as a parasite that it cannot survive in the absence of a host plant. It is a parasitic weed that seriously constrains the productivity of staples such as maize, sorghum, millet and rice.

Each plant is capable of producing up to 500,000 seeds, which may remain viable in the soil for over 10 years. Witch weeds seeds spread easily by wind, water, and soil via animal vectors. The chief means of dispersal, however, is through human interaction, by means of machinery, tools, and clothing.

Agricultural land with light soil and low nitrogen levels tend to favor its development. Still, witch weed has demonstrated a wide tolerance for soil types if soil temperatures are favorably high.

Management of witch weed is difficult because the majority of its life cycle takes place below ground. If it is not detected before emergence, it is too late to reduce crop loss. To prevent witch weed from spreading it is necessary to plant uncontaminated seeds and clean soil and plant debris off of machinery, shoes, clothing, and tools before entering fields.

Bush Fires

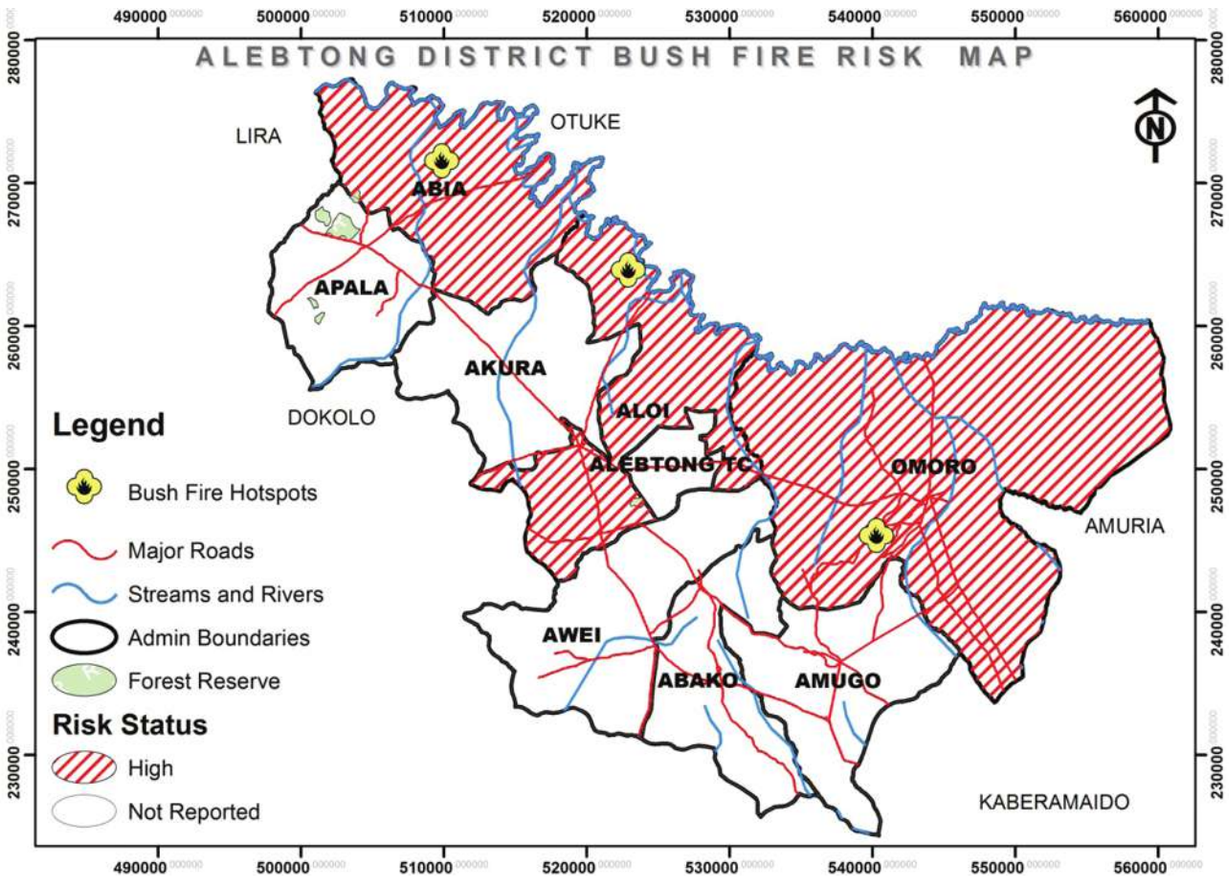

Figure 10: Bush Fires Risk Map
Source: Field Data Collected by OPM (May, 2014)

Figure 10 above depicts the risk status of bus fires in Alebton District. The communities of Abia, Aloi and Omoro sub counties are prone to high risk of bush fires while the rest of the district is not prone to the risk at all.

The devastation caused by bush fires has led to pollution and disruption of the ecosystem, farmers' mature crops like millet, sorghum, cassava etc have gotten burnt in the gardens and also stalls at home leading to food insecurity and poverty and houses have burnt.

VULNERABILITY

Table 7 summarizes the communities' assessment of hazard severity and frequency in the sun-counties. Table 8 transforms those qualitative low/medium/high judgements to numerical values 1/2/3 which when summed vertically show the relative risk per hazard. The horizontal sums show both cumulative and weighted vulnerability

Table 8: Risk and vulnerability assessment

Sub County	Hazards										Cumulative vulnerability (Absolute)	Weighted vulnerability (Cumulative/3)
	Prolonged dry spell	Animal Vectors and diseases	Crop pest and diseases	Environmental degradation	Flooding	Heavy storms	Human epidemic	Internal conflicts	Proliferation of Invasive weed species	Bush fires		
Aloi	1	2	2	3	2	3	1	1	0	3	18	6
Omoro	3	1	2	3	3	2	0	1	1	3	19	6
Akura	1	1	2	0	1	3	1	0	1	0	10	3
Abako	2	3	2	3	1	3	0	0	1	0	15	5
Abia	3	1	2	1	3	0	0	0	0	3	13	4
Apala	3	1	2	3	1	1	0	0	0	0	11	4
Awei	1	1	2	0	2	3	0	0	1	0	10	3
Amugu	1	3	2	2	0	0	0	1	1	0	10	3
Alebtong T/C	3	3	2	1	0	0	0	0	0	0	9	3
Total	**18**	**16**	**18**	**16**	**13**	**15**	**2**	**3**	**5**	**9**	**115**	
Key: 3 = High, 2 = Medium, 1 = Low, 0 = Not reported												

Risk Vulnerability

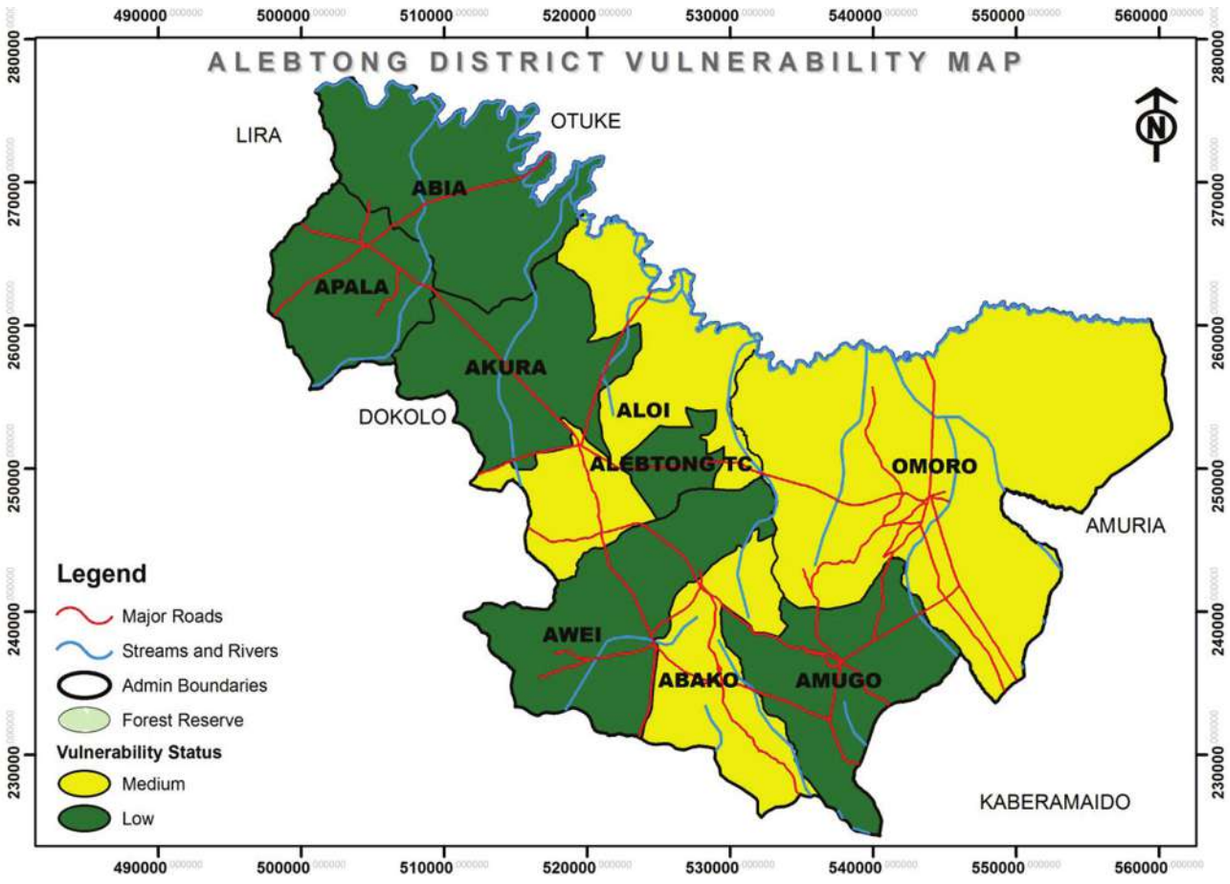

Figure 11: Risk Vulnerability Map
Source: Field Data Collected by OPM (May, 2014)

The vulnerability map in Figure 12 shows the areas of low, medium and high vulnerability according to the risk and vulnerability table (Table 8) above. In this analysis, the cumulative vulnerability of each sub-county is calculated and then weighted to provide weighted vulnerabilities for individual sub-counties. Therefore sub-counties with weighted vulnerability values less than 4 are coded “low”, termed low vulnerability areas and are assigned green, those from 5 to 7 are coded “medium”, termed medium vulnerability areas and are assigned yellow while those whose weighted vulnerabilities are 8 or more are coded “high”, termed high vulnerability areas and are represented by red.

Alebtong district is exposed to 10 hazards namely prolonged dry spell, crop pests and diseases, environmental degradation, animal vectors and diseases, heavy storms, flooding, proliferation of invasive species, internal conflicts, and human epidemic arranged in their order of risk from highest to lowest with total risks of 18, 18, 16, 16, 15, 13, 9, 5, 3 and 2 respectively. These are worsened by poor practices that include building houses close to rivers, lack of protective embankments/walls, constructing houses with weak designs, and deforestation of slopes with poor soils.

Omoro, Aloi and Abako sub-counties reported the highest vulnerability in Alebtong district with cumulative vulnerabilities of 19, 18 and 15 respectively and weighted vulnerabilities of 6, 6 and 5 respectively which lie in the middle (yellow) category of the vulnerability scale. The rest of the sub-counties displayed low (green) vulnerability with weighted vulnerabilities well below 5. Akura, Awei, Amugu, and Alebtong TC sub-counties were the least vulnerable sub-counties in the district with a weighted vulnerability value of 3 each.

Though all the elements of the community are vulnerable to the fore mentioned hazards, the burden lies heaviest on the elderly elements, the children and the women. The school children and the farmers are especially vulnerable to floods than any other groups. The poor elements of these communities too feel the pinch of the hazards more than their wealthy counterparts therefore are more vulnerable.

CONCLUSION

This multi hazard, risk and vulnerability profile for Alebtong District was produced after conducting a rigorous people centred, multi-sectoral, and multi stakeholder field data collection/mapping, analysis, and map production. It is therefore a synthesis of primary data, secondary data and the perception/experiences of the local people, the community leadership at all levels. Thus it portrays how the people of Alebtong perceive each of the hazards based on the past trends and the predicted likelihood of their occurrences and impact on the communities.

The stakeholders perceive that Alebtong district is vulnerable to ten hazards, in order of decreasing risk: prolonged dry spell, crop pests and diseases, environmental degradation, animal vectors and diseases, heavy storms, flooding, proliferation of invasive species, internal conflicts, and human epidemics.

Omoro, Aloi and Abako are the most vulnerable sub-counties with weighted vulnerabilities of 6, 6, and 5 respectively, all lying in the middle (yellow) category of the vulnerability scale. The rest of the sub-counties are less vulnerable to the resident hazards with weighted vulnerabilities well below 5 but should be fortified against occurrences of new hazards and exacerbation of resident hazards now occurring at lower magnitudes but which may be worsened by climate extremes expected in the near future. Akura, Awei, Amugu, and Alebtong TC sub-counties were the least vulnerable sub-counties in the district with a weighted vulnerability value of 3 each.

Timely early warning systems and other DRR interventions would be able to enhance the resilience of the people of Alebtong to the effects of climate change.

This profile is therefore a compelling outcome of an integration of the spatial information obtained from the mapping exercise and the community perception of the hazards. It should henceforth inform the contingency as well as the district development planning process towards disaster proof plans.

DEFINITION OF TERMS

Prolonged dry spell. This t is the prolonged shortage of water usually caused by lack of rain. Drought and food insecurity are related because crop and livestock productivity suffer in droughts.

Floods. A flood occurs when large amounts of water cover a place that is meant to be dry. Floods usually occur with high rainfall.

Epidemics. This is the occurrence of a disease, in a particular community and at a particular period, beyond normal levels and numbers. Epidemics may affect people, crops or livestock.

Human epidemics. The diseases include cholera, meningitis, hepatitis E, marbug, plague, avian influenza, Ebola and sleeping sickness among others.

Crop and animal epidemics. Animal epidemics include swine fever, foot and mouth disease, nagana, and bird flu. Crop disease epidemics include coffee wilt, banana bacterial wilt, cassava mosaic and cassava brown streak disease.

Heavy storms. Heavy storms in Uganda are often accompanied by hail, lightning and violent winds. Storms can result in destruction of crops, animals, public facilities and human settlements. Lightning can be deadly and may be mitigated by lightning ground conductors on buildings.

Pest infestation. These are destructive insects, worms, caterpillars or any other animal that attacks crops or livestock. Common pests in Uganda include weevils, locusts and caterpillars.
Vermin. Baboons, chimpanzees, bush pigs and other animals which raid crops cause damage and losses which may significantly diminish agricultural productivity.

Land conflict these are conflicts arising from ownership and use of land and other land resources.

Environmental Degradation This results from poor land use and other unsustainable ecosystem exploitation that lead to deterioration of the environment. Overgrazing, cultivation on sloping land, unguided and uncontrolled use of fertilizers and pesticides, bush burning, overfishing, deforestation, mining, poor wastewater treatment, inappropriate waste disposal and wetlands reclamation are examples of causes of environmental degradation.

Bush fires. Fires set deliberately to clear forest or pasture for agricultural purposes may go out of control and consume far more than intended.

Invasive Species. A non-native plant or animal that invades a habitat or bioregion with adverse economic, environmental, and/or ecological effects. An example is a grass that is dominating pasture in the Lango sub-region, reducing the grazing capacity of the land.

Available online: http://www.necoc-opm.go.ug/

THE REPUBLIC OF UGANDA

Department of Relief, Disaster
Preparedness and Management
Office of the Prime Minister
P.O. Box 371, Kampala, Uganda

With support from:

Empowered lives.
Resilient nations.

United Nations Development Programme

Plot 11 Yusuf Lule, Road, Nakasero
P. O. Box 7184, Kampala, Uganda
Tel: (+256) 417 112 100
Fax: (+256) 414 344 801
www.undp.org