THE REPUBLIC OF UGANDA

Agago District

Hazard, Risk and Vulnerability Profile

2016

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Acknowledgment

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Hon. Hilary O. Onek

Minister for Relief, Disaster Preparedness and Refugees

Executive Summary

This Agago Hazard, Risk and Vulnerability Profile integrate, scientific information provided by GoU agencies and hazard and vulnerability knowledge provided by communities on the Agago base map to contribute to a Ugandan atlas of disaster risk. It will support planning and decision-making processes to manage disaster risk in the Agago.

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 analyses the different hazards found in the District including the level of vulnerability by sub-county. According to the hazard summary, the District is most affected in order of hierarchy by; internal conflicts, bush fires, flooding, prolonged dry spell, environmental degradation, proliferation of invasive weed species, animal vectors and diseases, heavy storms, crop pests and diseases, vermin and human epidemics

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.

In comparison to its neighbours, Agago District is generally a medium vulnerability level District. Omot is the most vulnerable sub-county with a weighted vulnerability value of 8 represented by red on the map. Most of the sub-counties displayed medium vulnerability to the resident hazards with weighted vulnerabilities between 5 and 7. T/C and Wol sub-counties were the least vulnerable sub-counties in the District with a weighted vulnerability value of 4 each. These sub-counties though less vulnerable, should also 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.

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

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
MoLHUD	Ministry of Lands 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

Definition of Terms

Drought. Drought 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.

Food insecurity. Food Insecurity is the severe shortage of food that may lead to malnutrition and death.

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

Landslides. These are rapid movements of large mass of mud, rocks, formed from lose soil and water. Landslides occur mainly during the rainy season, but they can also be precipitated by earthquakes. Community settlement on steep slopes and other uncontrolled land use practices increase the probability of landslides.

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.

Cattle rustling. This is when one community raids another to steal livestock.

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.

Mines and unexploded ordinance. Mines are devices designed to explode with fatal effect when disturbed. Unexploded ordinance are unspent bullets, grenades, rockets, etc., which are discarded or stored.

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

Earthquakes. Earthquakes results from sudden violent movements of the earth's surface, sometimes causing massive loss of lives and property due to building collapse.

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 Rwenzori sub-region, reducing the grazing capacity of the land.

Introduction

Agago is vulnerable to a number of hazards that lead frequently to disasters. They include internal conflicts, bush fires, flooding, prolonged dry spell, environmental degradation, proliferation of invasive weed species, animal vectors and diseases, heavy storms, crop pests and diseases, vermin and human epidemics

The Agago 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 Agago. The information contained in this Agago Hazard, Risk, and Vulnerability Profile will guide the adoption of disaster risk management (DRM) measures in the Agago and inform the development of the Agago's contingency and development plans.

Objectives

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

Methodology

The multi hazard, risk and vulnerability mapping employed a people-centered, multi-sectoral, and multi-stakeholder approach. To capture the required information for production of the Agago profiles, a team of four led by the Office of the Prime Minister (OPM) visited stakeholders in a field mission to Lango region from 11th to 30th May, 2014. The team had One Disaster Preparedness Officer, One GIS Expert and two GIS Specialists. They worked in each Agago for an average of two days.

The field team interviewed Agago, Sub-County and Parish officials, and community members. They acquired secondary data through government sources (relevant Ministries, Departments and Agencies, and Agago authorities in the Lango Sub-Region) and data bases from other organizations/NGOS operating in these Agagos. The mapping team integrated the field data, secondary data and spatial data and analyzed them to produce hazard and vulnerability maps, interpretation and conclusions in Agago hazard, risk and vulnerability profiles.

The Agago profile production process had four phases:

Phase I: Preliminary Activities

Phase II: Field Data Collection and Mapping

Phase III: Data Analysis, Map Production, Report Writing and Verification

Phase IV: Dissemination

Phase I: Preliminary Activities

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

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 team and by stakeholders of the tasks of the multi-hazard, risk, and vulnerability mapping before any detailed field work was undertaken. This phase enabled early choice and scoping of specific mapping content and legends for the thematic maps.

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

Phase II: Field Data Collection and Mapping

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

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

Capture of spatial data: The mapping team acquired spatial data and digital base maps at appropriate scales. When necessary they digitized feature layers of paper maps. The base maps contained relevant feature data including terrain, Agago 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 team reviewed relevant documents at the Agago offices and other organizations, assimilating policy and legal documents, and existing maps, development plans, reports and studies to characterize the socioeconomic and geographic nature of the Agago. They used a checklist which summarized 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 activities and settlement patterns in hazard prone areas, the team visited infrastructure elements, observed principal household economic activities and spot-checked the locations of map features. They took the locations of hazard instances, called “hotspots”, using a GPS receiver and used satellite imagery to validate and extend map features.

Main instruments of data collection: The main tools for data collection were methodology guidebooks, key informant guides, notebooks, GPS receivers, digital camera, document scanner, Google Earth, Satellite images and topographic sheets of the mapping areas.

Phase III: Data Analysis, Map Production, Report Writing and Verification

Analysis of collected data: The team and Agago local government officials analyzed the collected data. The mapping team added thematic layers and hazard incident points (hotspots) 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: The following data analysis methods were used:

- Scanning, geo-referencing, digitizing, geo-processing, and data transformation
- Focus group discussions and team discussions
- Drafting, digitizing and GIS overlays
- Compiling data and information

Data editing, cleaning and coding: The mapping team used the various tools mentioned above for editing, cleaning and coding. They transcribed the qualitative and quantitative data obtained from the field into spread sheet tables using a data entry interface analogous to the field data forms. They cleaned the data by reconciling differences among the perceptions of the various stakeholders and resolving data anomalies as they edited the spread sheet tables that listed the hazards perceived in each sub-county. They chose coding schemes to distinguish and represent on the hazard maps the levels of risk perceived by the stakeholders.

Data analysis: After data were collected from the field, the mapping team analysed and represented them using MS Office software (MS Word and MS Excel for Windows). They analysed spatial data using ArcGIS software and mobile GIS applications, systematically overlaying hazard feature (layers) onto base maps to produce the 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 various types of hazards.

Generation and verification of draft maps: The mapping team elaborated a series of hazard risk maps which reflect the severity of each hazard risk in each sub-county, encoded as high (red), medium (yellow), low (green) , and "not reported" (clear), reflecting the perception of stakeholders. They summarized the vulnerability situation in the Agago on a single map by colour-coding the sub-counties according to the sum of the sub-county hazard risk scores divided by 3, using the following classification scheme:

Table 1 Vulnerability classification scheme

(Sum of hazard risk severities) / 3 in the sub-county	Vulnerability	Map colour code
0	none	clear
1 - 4	low	green
5 - 7	moderate	yellow
8 or more	high	red

The hazard summary table ranks the hazards according to the ascending order of the values of the sum of sub-county hazard risk scores for each hazard.

Several weeks later, the team returned to the region to present the draft Agago Hazard, Risk and Vulnerability Profiles in a verification workshop. They invited stakeholders to assess the maps' accuracy and completeness, identify errors and gaps, and provide correct information to be incorporated in the final map versions.

Phase IV: Dissemination Workshop

After publication of the set of the Agago hazard, risk, and vulnerability profiles of the region, OPM staff led a final workshop to dissemination them and promote awareness of their usefulness to local partners.

Over view of the District

Location

Agago District is situated in the Northern part of Uganda between longitudes 33 to 34 degrees East and latitude 2 to 3 degrees North. The District is bordered by Kitgum District in the North, Kotido and Abim in the East, Pader in the West, and Otuke in the Southwest and Lira District in the South.Agago was curved out of Pader District in July 2010 with its headquarters at Agago Town Council.

Vision

A prosperous and peaceful people of Agago who are able to cope up with global dynamics and can contribute towards national development.

Mission

To create a more conducive socio economic and political environment for effective service delivery which is in conformity with the National and local priorities in order to achieve sustainable development.

Institutional set up

The District has both political and Administrative structures up to the village. The Political structures include the District Council, Sub-county Council and LCI in charge of policy guidance.

The current Council is made up of 22 Councillors. The Council has established PAC, DLB and DSC. The District also has Resident District Commissioner who is in charge of among others advising the District on Central Government Policies and Programme.
Administratively, the District is made of 13 sub counties and 3 town Councils with 78 parishes and 906 villages.

Land use

Over 80% of the population in Agago District depend on Agriculture for livelihood according to the 2002 census report.

Climate, Rainfall and Temperature

Agago District has dry and wet seasons. The wet season extends from April to October with the highest rainfall peak in May and August. The dry season is from November to March. The total annual rainfall is 1,330mm and the average monthly maximum temperature is 29 degree centigrade and the average monthly minimum temperature is 17 degrees centigrade.

Relief and Vegetation

Agago District has one river Agago and several streams. The River and streams are seasonal and dry off in the dry season. The main source of safe drinking water in the District is underground water obtained through drilling of boreholes, shallow wells and spring protection.

The soil in the District is clay loam covering 90% of the cultivable Land. This soil is very suitable for rain fed agriculture. The rocky soils account for 3% and black clay soils accounts for 7% of the total soil mass in the District.

The vegetation of the District is predominantly savannah type comprising *hyperhania, terminalia, acacia,vitlelaria paradoxa* and *Butterspermum* species. Isolated spots along the river have forest type of vegetation.

The wetlands covers 37.2 square Kms (0.29% of the land area), along river valleys of River Agago. The wetlands in Agago District are seasonal. Notable palatable grass species for grazing animals include Panicum maximum hyperhania, *Pennisetum species*, among others.

The District originally had considerable population of wild life animals such as Elephants, Buffaloes, Uganda Kobs, Duikers, Ostriches, and Guinea Fowls. However, the entire large games have seriously reduced due to human activities.

The District's topography is characterized by low plains and rolling hills along the rivers, at 900 meters above sea level, rising to a series of hills and peaks in the eastern and north eastern parts of the District. The District lies at an average altitude of 1150mm above sea level.

Demographic characteristics

Table 2: Projected population of Agago

	2010			2011			2012		
	M	**F**	**T**	**M**	**F**	**T**	**M**	**F**	**T**
Adilang	13,800	13,700	27,500	14,500	14,300	28,800	15,300	15,000	30300
Lapono	10,200	10,400	20,600	10,800	10,900	21,700	11,300	11,400	22,700
Lira Palwo	19,400	19,800	39,200	20,400	20,700	41,100	21,500	21,700	43,200
Lokole	11,000	11,200	22,200	11,600	11,700	23,300	12,200	12,300	24,500
Omot	12,500	13,000	25,600	13,200	13,700	26,900	13,900	14,300	28,200
Paimol	15,200	15,600	30,800	16,000	16,300	32,300	16,800	17,100	33,900
Parabongo	16,100	16,300	32,400	16,900	17,100	34,000	17,900	17,900	35,800
Patongo	22,700	21,300	44,000	24,000	22,300	46,300	25,200	23,400	48,600
Wol	14,600	14,800	29,400	15,400	15,500	30,900	16,300	16,200	32,500
Total	**135,500**	**136,100**	**271,700**	**142,800**	**142,500**	**285,300**	**150,400**	**149,300**	**299,700**

NB.*This only covers the original sub counties as at the time of the creation of the District. Information for the rest can be availed later.*

Ethnic Groupings

The dominant tribal group in the District are the Acholi ,followed by Langi and some few Karamojong .Due to migration in search of Employments and marriages ,the District has also recorded some few Bantu, and iteso

Communication, settlement and Housing

The road network in the District is 1,131 Km of which, 206 classified/trunk, 485 District road and 440 community access roads, all marrum and seasonal roads. There are three air strips in the District located in Kalongo TC, Patongo TC and Arum Sub County. The District has

no post office but is served by the following telecommunication networks: UTL, Orange, and MTN. The District has no radio station.

The settlement pattern is sparse especially in the farm Land while most concentrations are in urban areas and around public institutions like churches, Hospitals and schools.

Major tribes and languages

The dominant tribal group in the District are the Acholi ,followed by Langi and some few Karamojong. Due to migration in search of Employments and marriages ,the District has also recorded some few Bantus, Iteso and

Table 3: Major tribes/Languages in Agago

S/N	LANGUAGES	PERCENTAGES
1	Acholi	90
2	Langi	9
3	Others	1

Table 4: Economic activities/livelihoods for each of the sub counties

S/N	SUB-COUNTY	ECONOMIC ACTIVITIES
1	Adilang	Subsistence crop and animal husbandry,Quarrying,Sand mining, small scale commercial trading,fishing,building materials(bamboo poles),trading in Shea products, cottage industries, Charcoal burning, brewing of local gin
2	Wol	Subsistence crop and animal husbandry, small scale commercial trading, Apiary, trading in Shea products, cottage industries, Charcoal burning,
3	Paimol	Subsistence crop and animal husbandry, cottage industries Charcoal burning, brewing of local gin
4	Omiya Pacwa	Subsistence crop and animal husbandry, cottage industries Charcoal burning, brewing of local gin
5	Lapono	Subsistence crop and animal husbandry, small scale commercial trading, citrus, trading in Shea products, cottage industries, Charcoal burning, brewing of local gin
6	Arum	Subsistence crop and animal husbandry, trading in Shea products, cottage industries, Charcoal burning, brewing of local gin,

S/N	SUB-COUNTY	ECONOMIC ACTIVITIES
7	Omot	Subsistence crop and animal husbandry, Sand mining, small scale commercial trading, Charcoal burning, trading in Shea products, cottage industries, brewing of local gin
8	Patongo s/cty	Subsistence crop and animal Charcoal burning husbandry, citrus, trading in Shea products, cottage industries, brewing of local gin
9	Kotomor	Subsistence crop and animal husbandry, Sand mining, trading in Shea products, cottage industries, Charcoal burning, brewing of local gin
10	Patongo TC	Subsistence crop and animal husbandry, fishing, small scale commercial trading, cottage industries, Charcoal burning, brewing of local gin
11	Lira Palwo	Subsistence crop and animal husbandry, fishing small scale commercial trading, trading in Shea products, cottage industries, Charcoal burning, brewing of local gin,
12	Agago TC	Subsistence crop and animal husbandry, fishing small scale commercial trading, trading in Shea products, cottage industries, Charcoal burning, brewing of local gin
13	Kalongo TC	Subsistence crop and animal husbandry, Quarrying, Sand mining, small scale commercial trading, , cottage industries, Charcoal burning, brewing of local gin
14	Parabongo	Subsistence crop and animal husbandry, trading in Shea products, cottage industries, Charcoal burning, brewing of local gin
15	Lokole	Subsistence crop and animal husbandry, fishing,Apiary,citrus trading in Shea products, cottage industries, Charcoal burning, brewing of local gin
16	Lamiyo	Subsistence crop and animal husbandry, fishing, Sand mining, trading in Shea products, cottage industries, Charcoal burning, brewing of local gin.

The livelihoods of the women is based on the sale of the proceeds from the above economic activities since they are dependent mostly on female labor save for fishing, quarrying and sand mining which are dominated by men.

Hazards

Table 5: Hazard status

HAZARD	STATUS	SUC-COUNTITY	RANK
Internal Conflicts	Incidences of Land disputes and Domestic Violence (SGBV) reported	Kotomor S/C, Adilang S/C, Lapono S/C, Patongo S/C, Omiya Pacwa S/C, Wol S/C and Lokole S/C,	**1**
Bush Fires	Incidences of massive fires reported. Loss of mature crops in gardens, houses get burnt, lives are occasionally lost, and loss of soil fertility, humidity and erosion. Common in the months of November-Feb	All Sub Counties	**2**
Floods/water Logging	Incidences reported in all sub counties of the District. Two schools were almost closed, several latrines sunk, fields of gardens flooded dozens of people displaced	Paimol S/C, Patongo T/C, Patongo S/C, Omot S/C, Lira Palwo S/C, Arum S/C, Lamiyo S/C, Lapono S/C, Parabongo S/C,Wol	**3**
Prolonged dry spell	December-Late march, June-August. Majorly it affects crop yields and animals	Widespread in the District	**4**
Environmental Degradation	Incidences of Wetland Encroachment, Deforestation, reported. Indiscriminate tree felling for charcoal is leading to large expanses of bare land	Kalongo T/C, Arum S/C, Omot S/C, Kotomor S/C, Adilang S/C, Lapono S/C,Wol	**5**
Invasive species	Incidences of Congress and striger weed reported	Lokole S/C, Arum S/C, Patongo S/C, Patongo T/C, Agago T/C, Lamiyo S/C, Kotomor S/C, Adilang S/C, Lira Palwo S/C and Omot S/C,Wol	**6**
Animal Vectors and Diseases	Incidences of Variegated grass hoppers reported. These are capable of inflicting 100% loss to the farmers. Common in the first rainy season	Kalongo T/C	**7**
	Incidences of Tsetse flies, Ticks and Liver Flukes Reported. Its common during the rainy season	Arum S/C, Omot S/C, Patongo S/C, Kotomor S/C, Adilang S/C and Parabongo S/C,Wol	
	Incidences of Rabies reported	Adilang S/C	
	Incidences of Foot and Mouth Disease	Lapono S/C	
	Incidences of African Swine Fever and New Castle reported	All Sub Counties	

HAZARD	STATUS	SUC-COUNTITY	RANK
Heavy Storms`	Incidences of hailstorm, heavy strong winds and lightning reported. Crops destroyed, residential/Commercial houses de-roofed, market lockups de-roofed in Lira Palwo market, geregere P/S, Kotomor P/S and Opyelo P/S. The storms are common in the months of April-May and August -September	Lira Palwo S/C, Omot S/C, Arum S/C, Patongo S/C, Patongo T/C, Lapono S/C, Kotomor S/C and Paimol S/C, Lamiyo s/cty	**8**
Crop Pests and Diseases	Incidences of caterpillars affecting Pigeon Peas reported. These are capable inflicting 100% loss to the farmers. Its common in the months of June-September	Arum S/C, Omot S/C, Patongo S/C, Kotomor S/C and Adilang S/C	**9**
Vermin and other wild animals	Incidences of Velvet, baboons and other problem animals reported. Elephants are the most destructive ravaging more than ten acres of crops every night. Maize and rice are the most destroyed crops.	Omiya Pacwa S/C, Paimol S/C, Lapono S/C, Adilang S/C, Wol S/C, Parabongo S/C, and Kalongo T/C, Lokole S/C,	**10**
Human Epidemic	Incidences of CCHF reported. Seven people have died due to the infirmity.	Omot S/C	**11**
	Incidences of Yellow fever reported. Sixty four cases reported with 16 deaths	Lapono S/C, Omiya Pacwa S/C, Lokole S/C and Paimol S/C	

Table 4 displays the status and summarizes the nature of hazards in the District and provides the locations of instances. It also ranks the hazards according to their magnitude

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: Summary of hazards by Sub-county

sub-County	Crop Pests and Diseases	Human Epidemic	Vermin and other problem animals	Heavy Storms`	Animal Vectors and Diseases	Invasive species	Environmental Degradation	Prolonged dry spell	Floods/water Logging	Bush Fires	Internal Conflicts	TOTAL
Arum	✓			✓	✓	✓		✓	✓	✓		7
Agago T/C						✓		✓		✓		3
Kalongo T/C			✓		✓		✓	✓		✓		5
Patongo T/C				✓		✓		✓	✓	✓		5
Parabongo			✓		✓			✓	✓	✓		5
Lapono		✓	✓	✓	✓		✓	✓	✓	✓	✓	9
Lamiyo				✓		✓		✓	✓	✓		5
Omot	✓	✓		✓	✓	✓	✓	✓	✓	✓		9
Adilang	✓		✓		✓	✓		✓		✓	✓	7
Kotomor	✓				✓		✓	✓		✓	✓	6
Patongo S/C	✓			✓		✓		✓	✓	✓	✓	7
Wol			✓		✓	✓	✓	✓	✓	✓	✓	8
Lokole		✓	✓			✓		✓	✓	✓		6
Lira Palwo												5
Paimol		✓	✓	✓				✓	✓	✓		6
Omiya Pacwa		✓	✓					✓		✓	✓	5
TOTAL	5	5	8	8	8	10	5	16	10	16	7	85

Hazard Risk Assessment

Table 7 expresses the communities' assessment of severity and likelihood of risk in their respective sub-counties. Each of the columns 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.

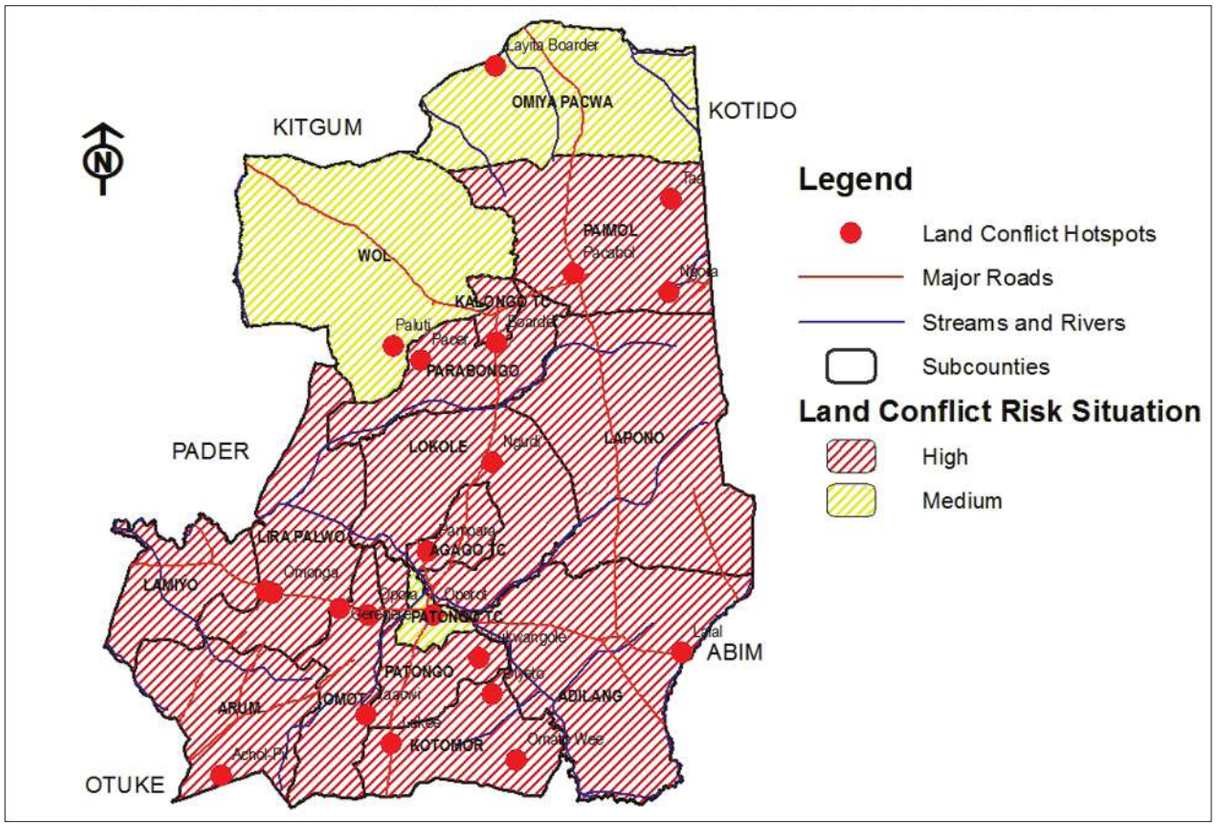
Table 7: Hazard risk assessment

Sub county	Hazards										
	Heavy Storms	Crop Pests and Diseases	Animal Vectors and Diseases	Environmental Degradation	Internal Conflicts	Prolonged dry spell	Human Epidemic	Flooding	Bush Fires	Proliferation of Invasive Weed Species	Vermin
Omiya Pacwa	M	N	M	H	M	M	N	M	M	L	M
Wol	N	N	L	M	M	M	N	M	H	N	L
Lamiyo	M	M	N	L	H	M	N	H	H	M	N
Arum	M	H	L	M	H	M	N	H	H	H	N
Omot	M	H	L	H	H	M	N	M	H	H	L
Lira Palwo	M	M	H	M	H	M	N	M	H	M	N
Kotomor	L	M	L	M	H	M	N	M	H	M	L
Patongo	L	L	N	M	H	M	N	H	H	M	L
Patongo T/C	N	N	N	L	M	M	N	H	L	M	N
Agago T/C	N	N	N	M	H	M	N	M	H	L	L
Adilang	L	M	H	L	H	M	N	L	H	L	L
Lapono	N	N	H	M	H	M	N	L	H	N	M
Lukole	L	L	L	M	H	M	M	M	H	L	L
Parabongo	1	M	M	M	H	M	L	M	H	L	N
Kalongo T/C	1	N	M	M	H	M	M	L	H	L	M
Paimol	M	N	M	M	H	M	M	M	M	M	M
Key: H = High, M = Medium, L =Low, N = Not reported											

Risks

Internal Conflict

Figure 1: Internal Conflict Risk Map

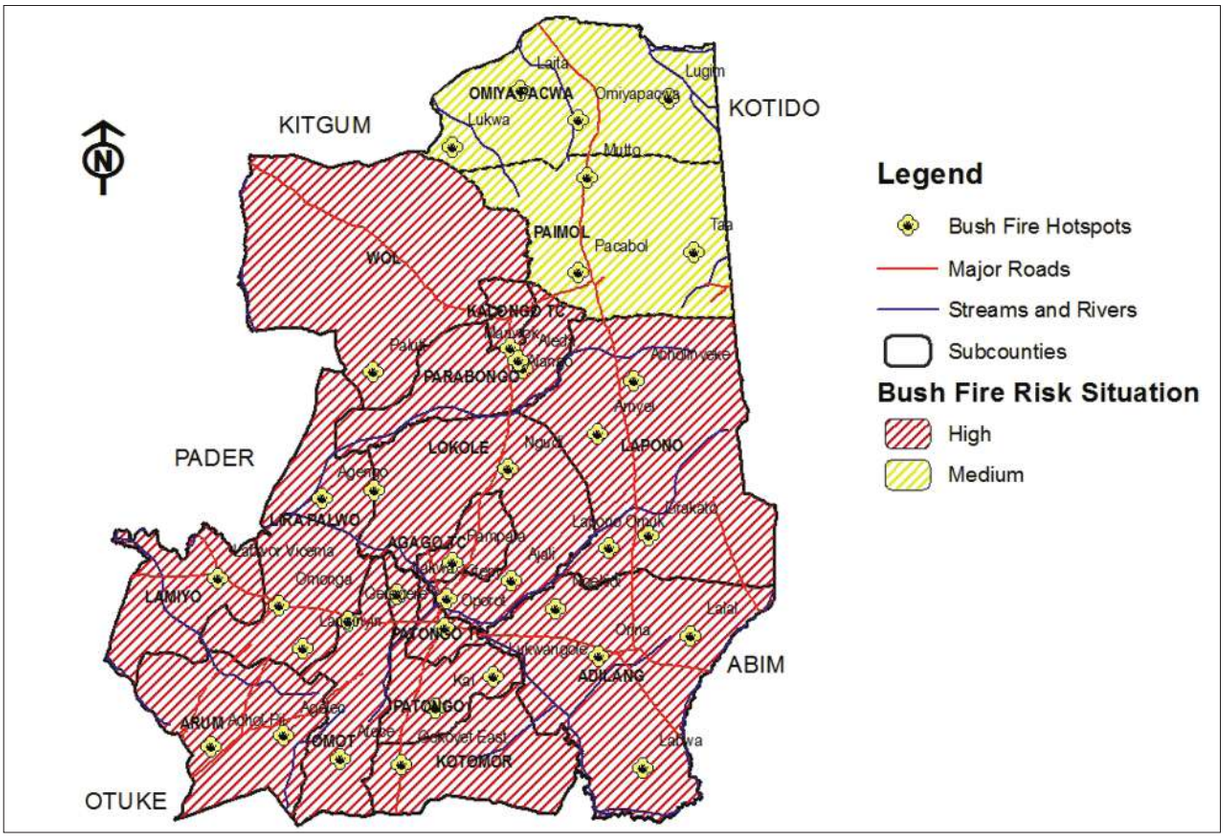


Source: Field Data Collected by OPM (May, 2014)

This is common in all the LLGs and is characterized by Land and SGBV conflicts. The sub counties that are most affected by the vice include: Kotomor S/C, Adilang S/C, Lapono S/C, Patongo S/C, Omiya Pacwa S/C, Wol S/C and Lokole S/C,Wol. These land conflicts are between individuals, intra Sub County and sometimes conflict over communal grazing land. The biggest effects of which includes loss of live, crops, shelter and imprisonment in the extreme. The impacts of these conflicts are usually bonded by women, children, youths and the elders.

Bush Fire

Figure 2: Bush Fire Risk Map

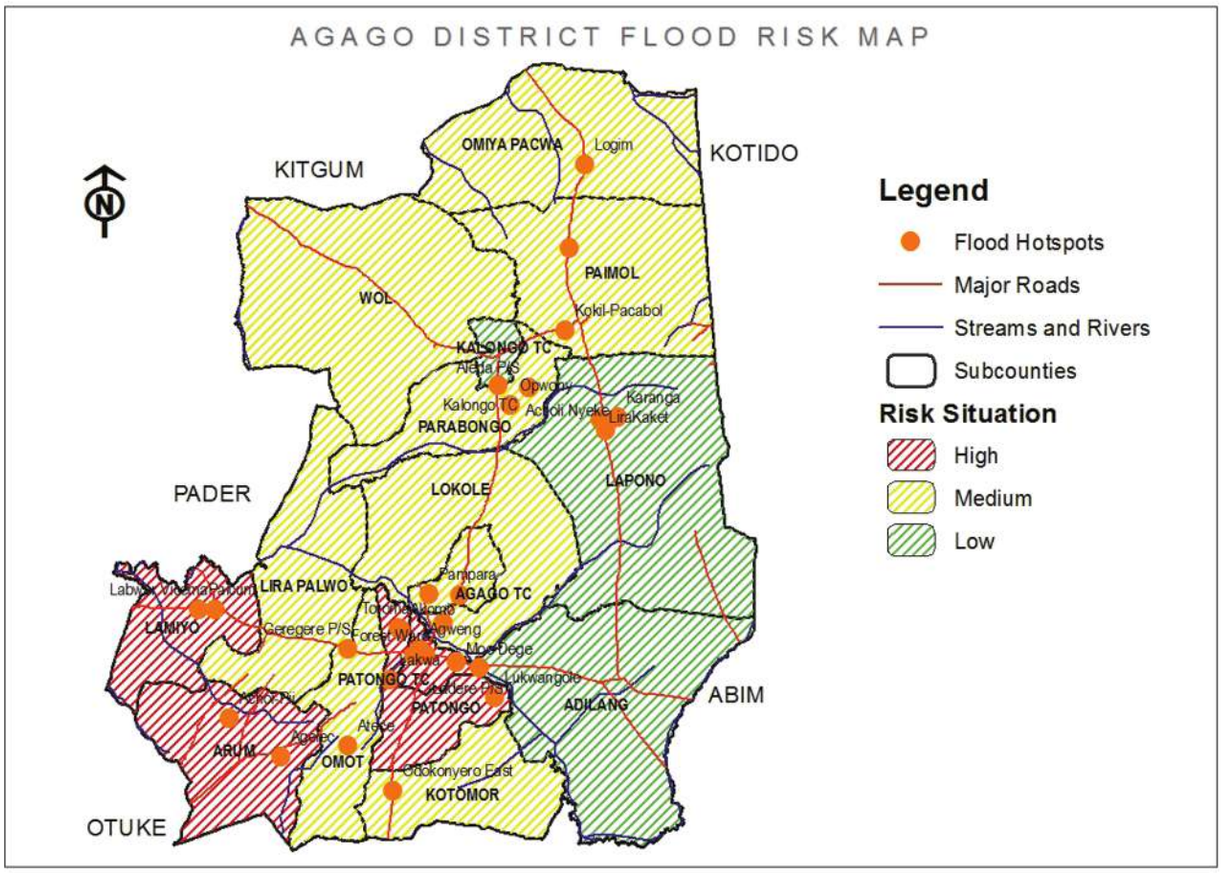


Source: Field Data Collected by OPM (May, 2014)

Incidences of massive fires reported throughout the District. This is associated with loss of mature crops in gardens, houses get burnt, lives are occasionally lost, and loss of soil fertility, humidity and erosion. Common in the months of November-Feb with Paimol and Omiya Pacwa having a moderate level of risk.

Floods/Water Logging

Figure 3: Floods/Water Logging Risk Map

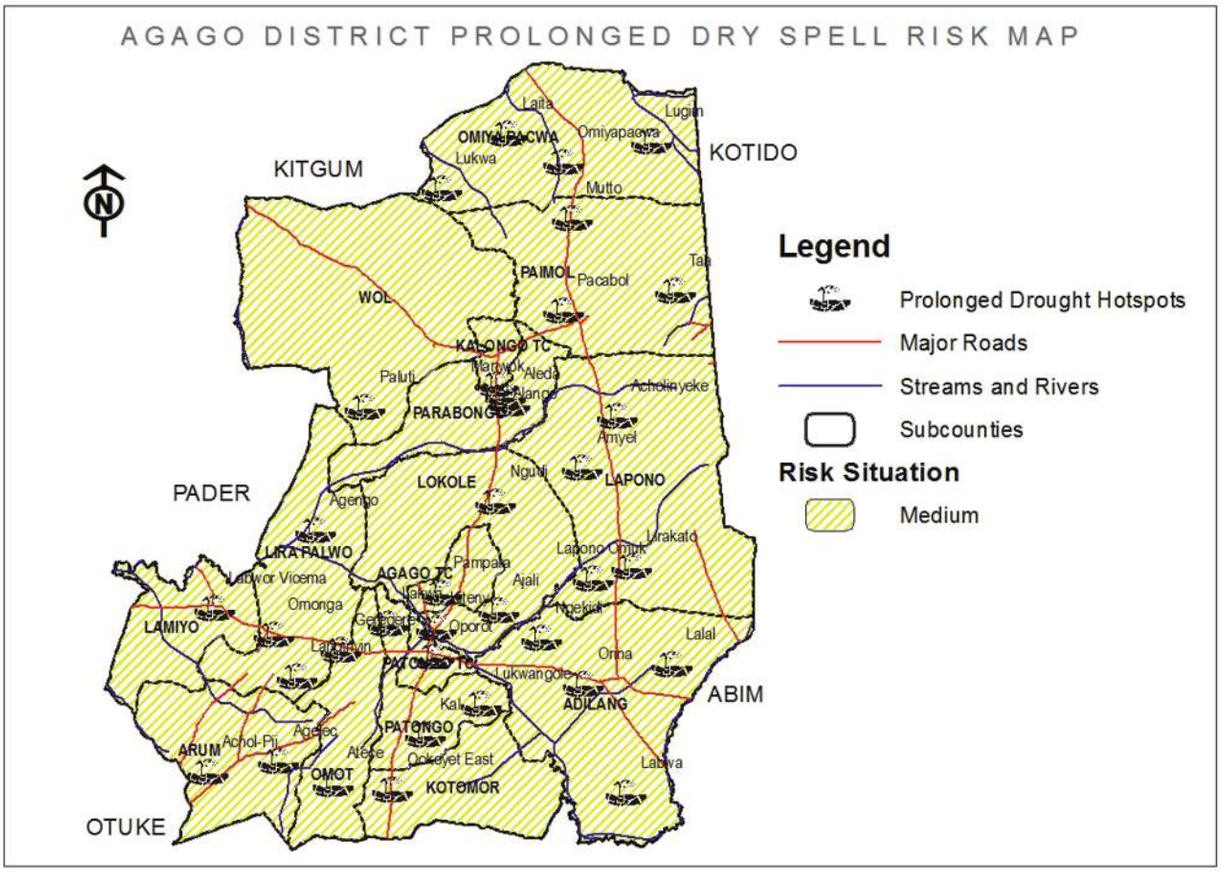


Source: Field Data Collected by OPM (May, 2014)

The most common type of floods are flash floods attributed to heavy rainfall especially during the wet season. Serious cases are reported in the areas that are in wetlands and low lying. The Sub counties affected include: Paimol S/C, Patongo T/C, Patongo S/C, Omot S/C, Lira Palwo S/C, Arum S/C, Lamiyo S/C, Lapono S/C, Parabongo S/C, and Wol. Two schools were almost closed, several latrines sunk, fields of gardens flooded, dozens of people displaced and culverts and road surfaces washed off making them un motorable.

Prolonged dry spell

Figure 4: Prolonged dry spell Risk Map

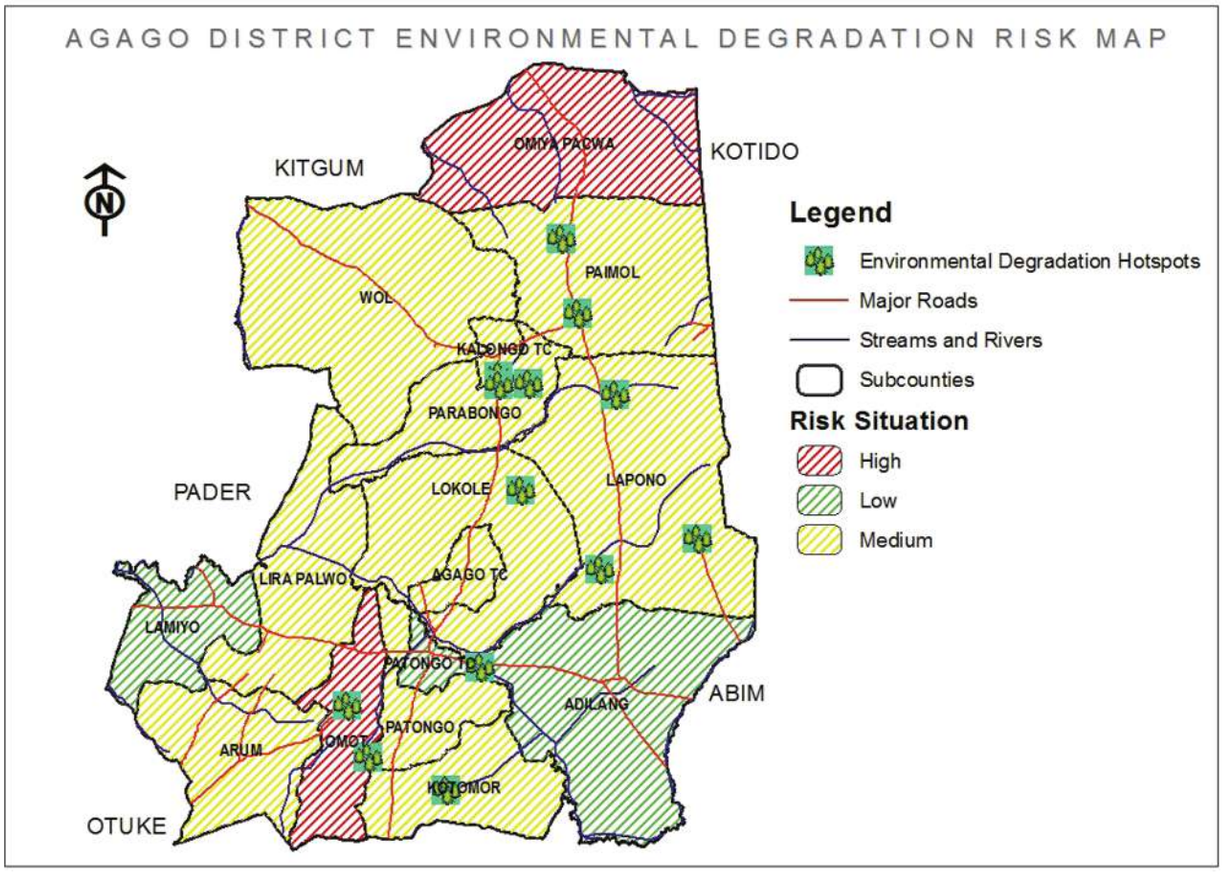


Source: Field Data Collected by OPM (May, 2014)

Its common in the months of December-Late march, June-August and majorly it affects crop yields and animals. This happens throughout the District due to the severe conditions of climate change. The severe impacts are depicted in crop failure, reduction in livestock productivity, environmental degradation. The prolonged dry spell has not only catalyzed food insecurity but also other related effects such as scarcity of water for both animals and human beings. Prolonged dry spell has in some way changed the farmer's calendar due to unpredictable climate conditions as they are not sure of when to plant.

Environmental Degradation

Figure 5: Environmental Degradation Risk Map

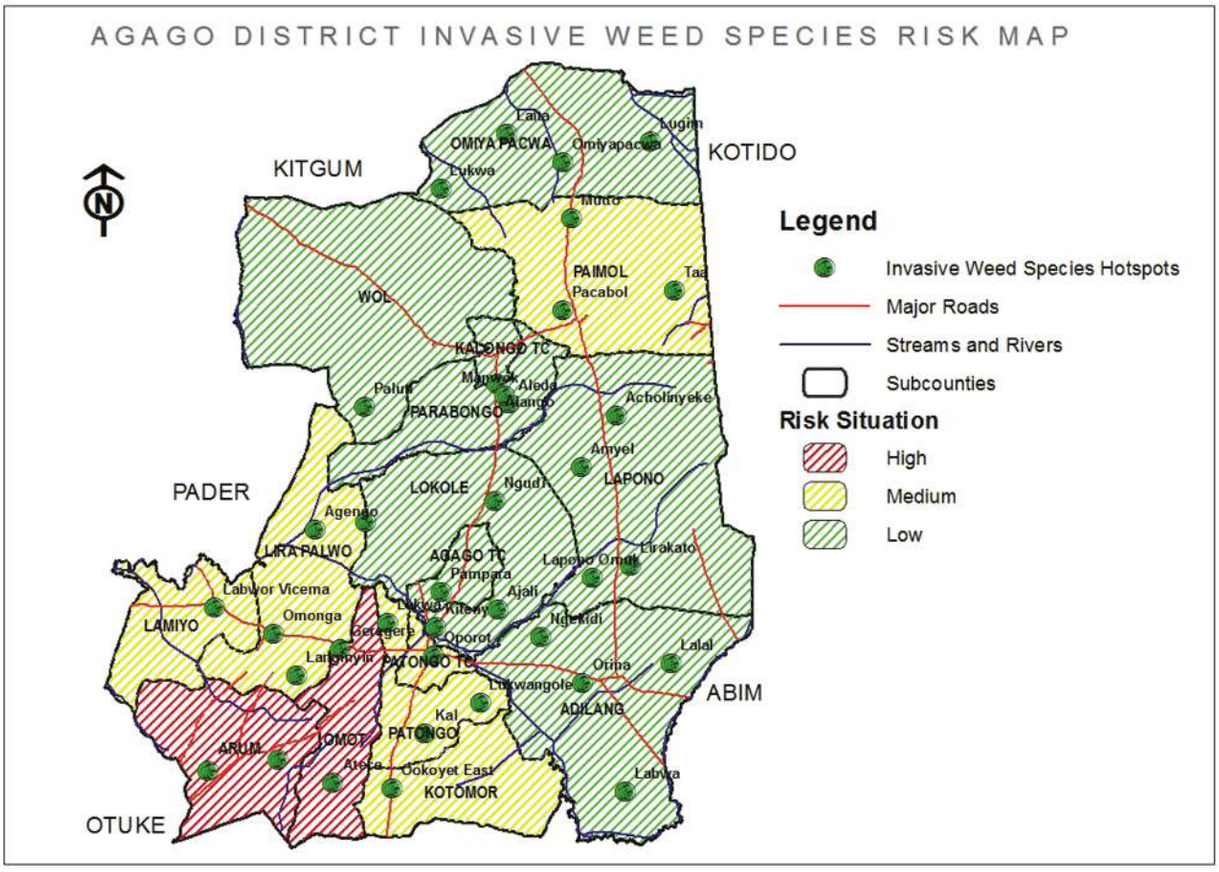


Source: Field Data Collected by OPM (May, 2014)

This is rampart with in the District; Incidences of Wetland Encroachment, Deforestation, reported. Indiscriminate tree felling for charcoal is leading to large expanses of bare land. The worse hit sub counties include: Omot S/C, and Omiya Pacwa while Kalongo T/C, Arum S/C, Kotomor S/C, Adilang S/C, Lapono S/C and Wol are moderately affected. The environment is increasingly being abused because majority of the population if not all relie on natural resources for their livelihood. Prolonged dry spell has enhanced communities to look at the forests as the only means of survival through charcoal burning. INCLUDE NAMES OF RIVERS BEING SILTED

Invasive weeds

Figure 6: Invasive weeds Risk Map

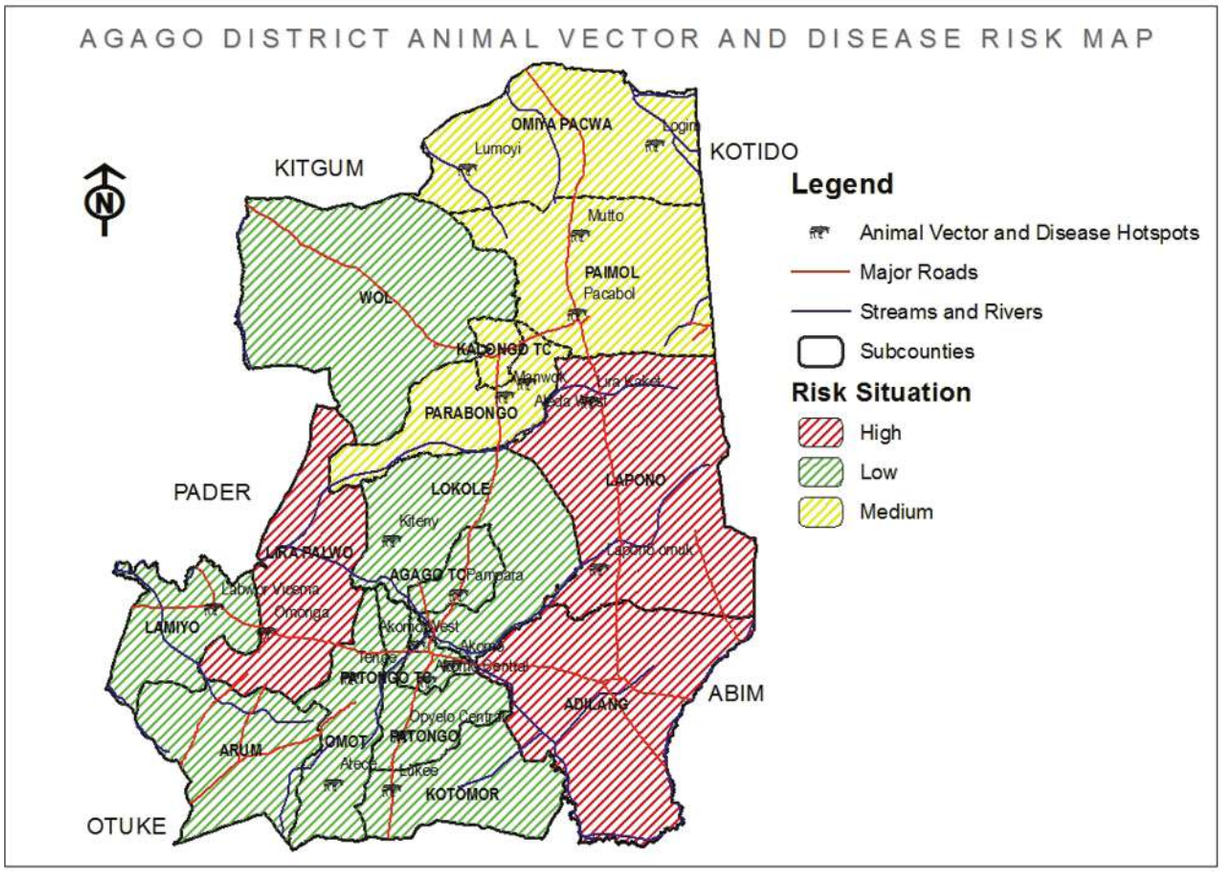


Source: Field Data Collected by OPM (May, 2014)

Incidences of Congress and striger weeds reported. Congress weeds are commonly found in former IDP camps and the mode of dispersion include run off, wind and animals. This makes it very invasive. The worst affected sub counties include: Lokole S/C, Arum S/C, Patongo S/C, Patongo T/C, Agago T/C, Lamiyo S/C, Kotomor S/C, Adilang S/C, Lira Palwo S/C and Omot S/C, Wol. The greatest impacts include: loss of pasture for animals, loss of crops and death of animals.

Vectors and Animal Diseases

Figure 7: Vectors and Animal Diseases Risk Map

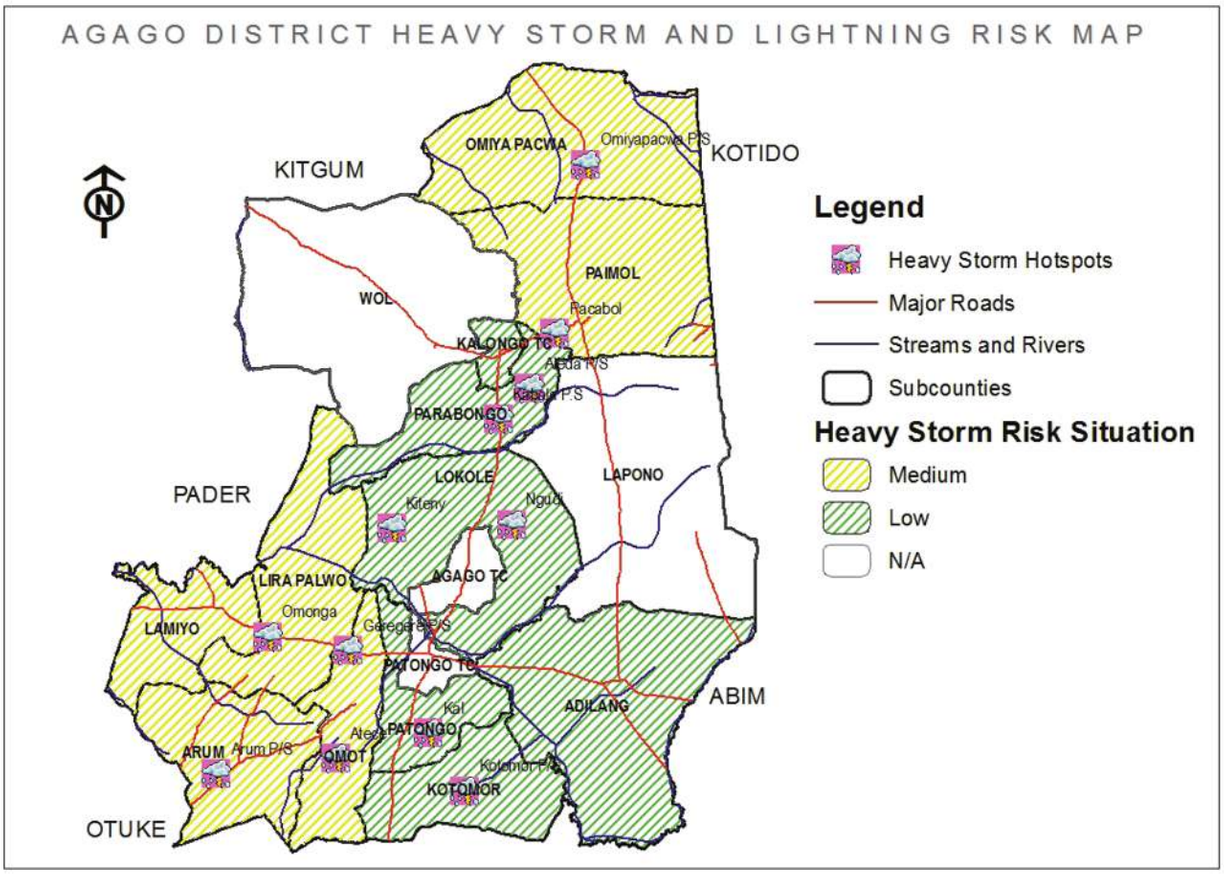


Source: Field Data Collected by OPM (May, 2014)

Incidences of Tsetse flies, Ticks and Liver Flukes reported. It's common during the rainy season and the sub counties affected include: Arum S/C, Omot S/C, Patongo S/C, Kotomor S/C, Adilang S/C and Parabongo S/C, Wol. There was an incidence of Rabies reported in Adilang Sub County. A number of pigs were lost to African swine fever and just like for birds that were equally lost to New Castle and this was reported in all the sub counties.

Heavy Storms Risk

Figure 8: Heavy Storms Risk Map

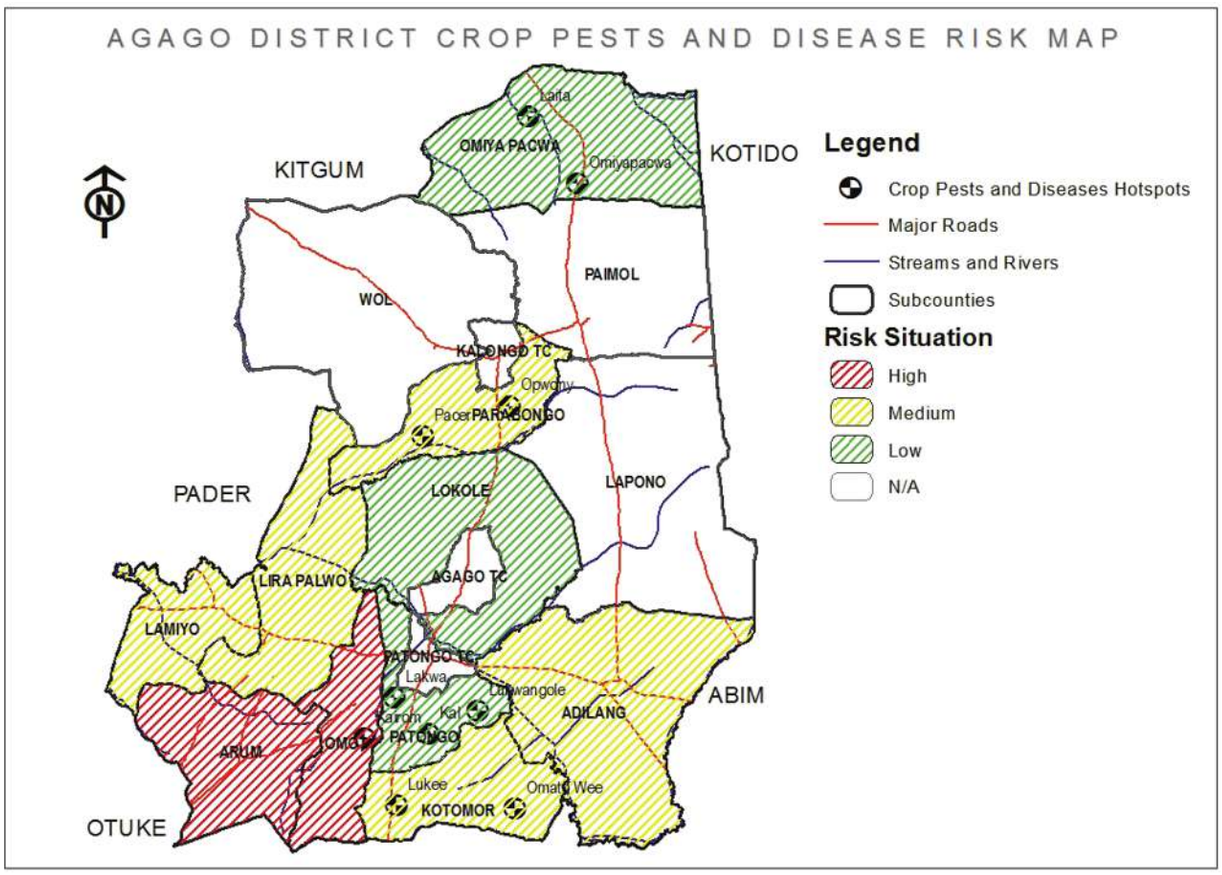


Source: Field Data Collected by OPM (May, 2014)

Incidences of hailstorm, heavy strong winds and lightning reported. Crops destroyed, residential/Commercial houses de-roofed, market lockups de-roofed in Lira Palwo market, geregere P/Kotomor P/S. The storms are common in the months of April-May and August – September. This was dominant in the sub counties of: Lira Palwo S/C, Omot S/C, Arum S/C, Patongo S/C, Patongo T/C, Lapono S/C, Kotomor S/C and Paimol S/C.

Crop Pests and Diseases

Figure 9: Crop Pests and Diseases Risk Map

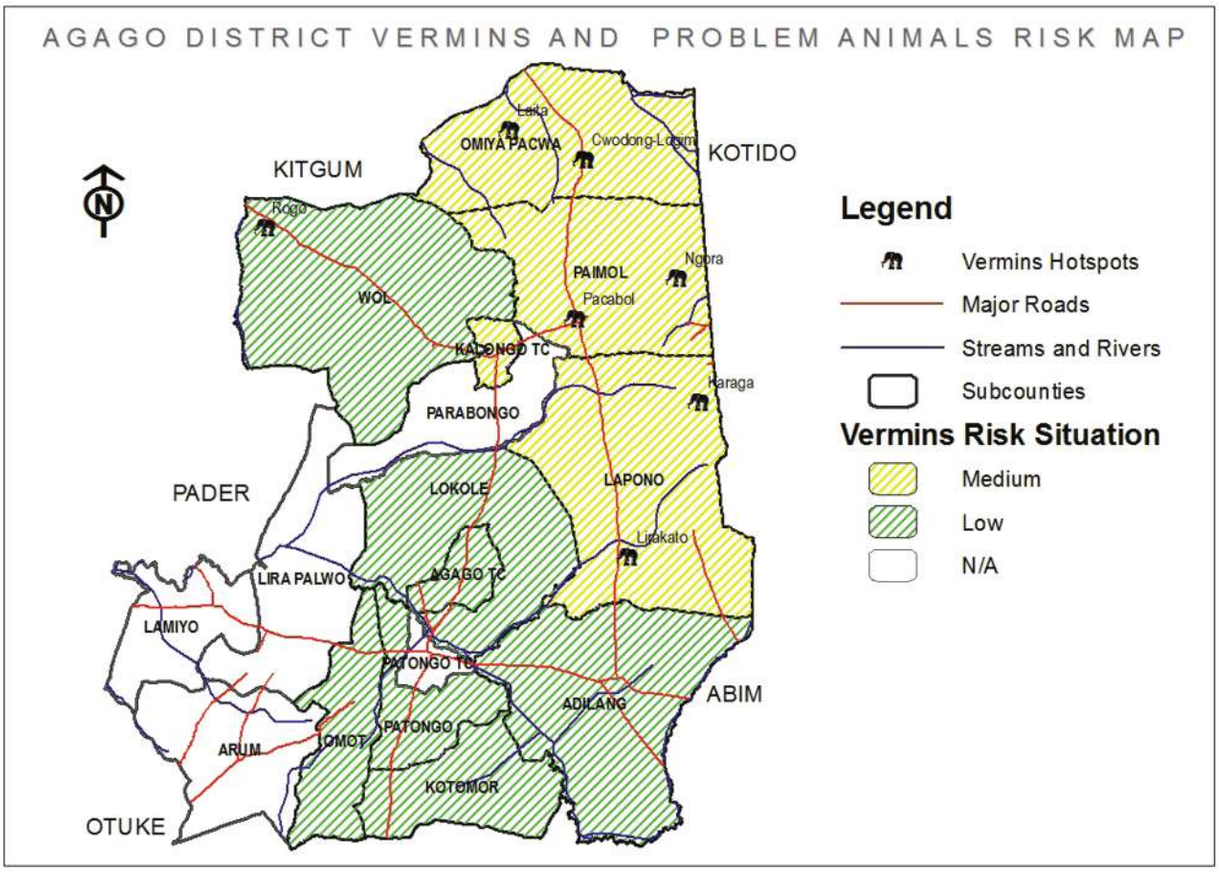


Source: Field Data Collected by OPM (May, 2014)

Incidences of caterpillars affecting Pigeon Peas reported. These are capable inflicting 100% loss to the farmers' .Its common in the months of June-September and mostly found in the sub counties: Arum S/C, Omot S/C, Patongo S/C, Kotomor S/C and Adilang S/C .There were also incidences of variegated grass hoppers reported in Kalongo TC. These are capable of inflicting 100% loss to the farmers. Common in the first rainy season.

Vermin and other Wild Animals

Figure 10: Vermin and other Wild Animals Risk Map

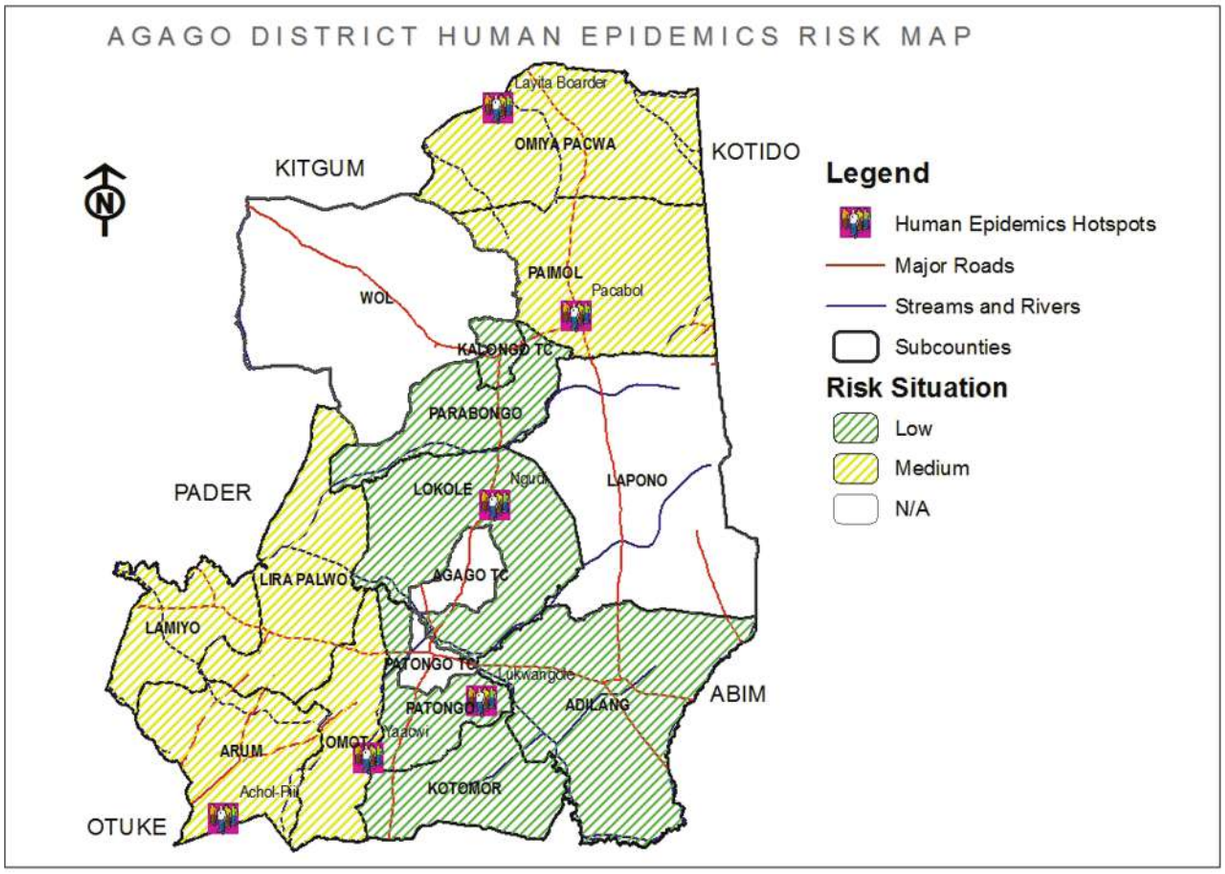


Source: Field Data Collected by OPM (May, 2014)

Incidences of Velvet, baboons and other problem animals reported. Elephants are the most destructive ravaging more than ten acres of crops every night. Maize and rice are the most destroyed crops. It's common in the sub counties of: Omiya Pacwa S/C, Paimol S/C, Lapono S/C, Adilang S/C, Wol S/C, Parabongo S/C, and Kalongo T/C, Lokole S/C.

Human Epidemics

Figure 11: Human Epidemics Risk Map



Source: Field Data Collected by OPM (May, 2014)

Incidences of CCHF reported in Omot Sub County. Seven people have died due to the infirmity. There were also incidences of Yellow fever reported in the sub counties of: Lapono S/C, Omiya Pacwa S/C, Lokole S/C and Paimol S/C where Sixty four cases reported with 16 deaths.

Vulnerability

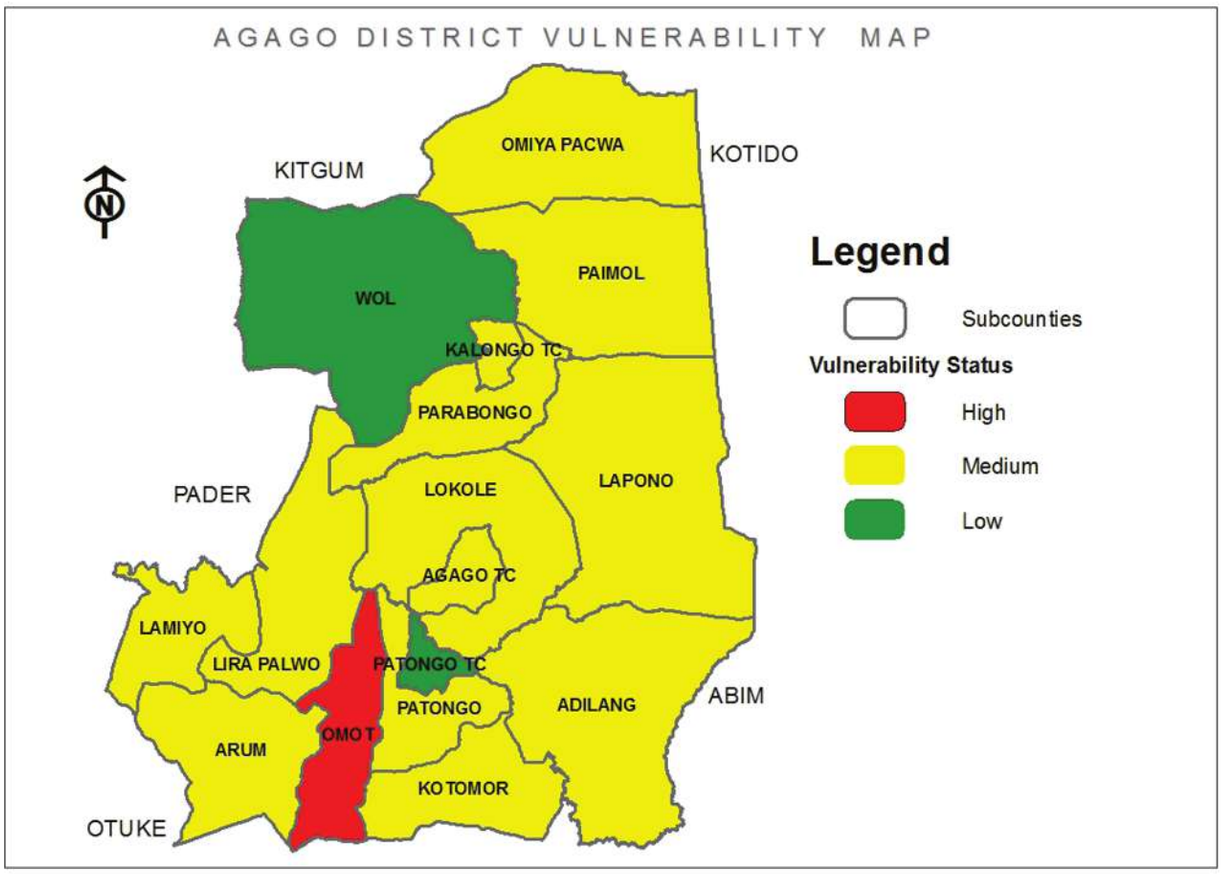
Table 7 summarizes the communities' assessment of hazard severity and frequency in the sun-counties. Table 8 below transforms those qualitative low/medium/high judgements to numerical values 1/2/3 which when summed vertically show the relative risk per hazard. The horizontal sums show both cumulative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

Table 8: Risk and vulnerability assessment

Sub county	Hazards											Cumulative vulnerability (Absolute)	Weighted vulnerability (Cumulative/3)
	Heavy Storms	Crop Pests and Diseases	Animal Vectors and Diseases	Environmental Degradation	Internal Conflicts	Prolonged dry spell	Human Epidemics	Flooding	Bush Fires	Proliferation of Invasive Weed Species	Vermin		
Omiya Pacwa	2	0	2	3	2	2	0	2	2	1	2	18	6
Wol	0	0	1	2	2	2	0	2	3	0	1	13	4
Lamiyo	2	2	0	1	3	2	0	3	3	2	0	18	6
Arum	2	3	1	2	3	2	0	3	3	3	0	22	7
Omot	2	3	1	3	3	2	0	2	3	3	1	23	8
Lira Palwo	2	2	3	2	3	2	0	2	3	2	0	21	7
Kotomor	1	2	1	2	3	2	0	2	3	2	1	19	6
Patongo	1	1	0	2	3	2	0	3	3	2	1	18	6
Patongo T/C	0	0	0	1	2	2	0	3	1	2	0	11	4
Agago T/C	0	0	0	2	3	2	0	2	3	1	1	14	5
Adilang	1	2	3	1	3	2	0	1	3	1	1	18	6
Lapono	0	0	3	2	3	2	0	1	3	0	2	16	5
Lukole	1	1	1	2	3	2	2	2	3	1	1	19	6
Parabongo	1	2	2	2	3	2	1	2	3	1	0	19	6
Kalongo T/C	1	0	2	2	3	2	2	1	3	1	2	19	6
Paimol	2	0	2	2	3	2	2	2	2	2	2	21	7
TOTAL	18	18	22	31	45	32	7	33	44	24	15	289	

Vulnerability

Figure 12: Risk Vulnerability



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.

Agago District is exposed to 11 hazards namely internal conflicts, bush fires, flooding, prolonged dry spell, environmental degradation, proliferation of invasive weed species, animal vectors and diseases, heavy storms, crop pests and diseases, vermin and human epidemics arranged in their order of risk from highest to lowest with total risks of 45, 44, 33, 32, 31, 24, 22, 18, 18, 15 and 7 respectively. These are due to lack of access to health facilities, lack of capacity to control pests and diseases, charcoal burning and cultivation in wetlands, internal conflicts due to competition for resources, land ownership, Alcoholism and lack of awareness regarding human rights. People have also often burnt bushes in search of cultivation land, pastures for the animals, hunting and sometimes accidentally. The invasive weeds were introduced with the food ratio distributed during the IDP camps and are

mostly concentrated around those camps. Their rate of spreading is very high due to lack of capacity to contain and their mode of dispersion i.e. run off and wind.

As shown by both the table and map, Omot sub-county reported the highest vulnerability in Agago District with a cumulative vulnerability value of 23 and a weighted vulnerability of 8 which lies in the top (red) category of the vulnerability scale as shown in the map above. Most of the sub-counties displayed medium (yellow) vulnerability with weighted vulnerabilities between 5 and 7. Patongo T/C and Wol sub-counties were the least vulnerable sub-counties in the District with a weighted vulnerability value of 4 each.

The most affected categories include the women and the children since it's the women who are mostly engaged in Agriculture which is affected by crop pest, environmental degradation, bush fire and invasive weeds. They are also affected by internal conflicts which is characterized by depriving them of farm land and the proceeds.

Conclusions

This multi hazard, risk and vulnerability profile for Agago 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 Agago 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 Agago District is vulnerable to eleven hazards, in order of decreasing risk: internal conflicts, bush fires, flooding, prolonged dry spell, environmental degradation, proliferation of invasive weed species, animal vectors and diseases, heavy storms, crop pests and diseases, vermin and human epidemics

Omot is the most vulnerable sub-county with a weighted vulnerability value of 8 represented by red on the map. Most of the sub-counties displayed medium vulnerability to the resident hazards with weighted vulnerabilities between 5 and 7. T/C and Wol sub-counties were the least vulnerable sub-counties in the District with a weighted vulnerability value of 4 each. These sub-counties though less vulnerable, should also 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.

Timely early warning systems and other DRR interventions would be able to enhance the resilience of the people of Agago 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.

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