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# TESO

# KATAKWI District

## HAZARD, RISK AND VULNERABILITY

### PROFILE

June 2014



**With support from:**

United Nations Development Programme

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## Acronyms

CBO	Community Based Organization
DDMC	District Disaster Management Committee
DPU	Development Planning Unit
DWD	Directorate of Water Development
FM	frequency modulation
GIS	Geographic Information System
GMT	Greenwich Mean Time
GPS	Global Positioning System
HMIS	Health Management Information System
LLG	Lower Local Government
MW	medium wave
MIS	Management Information System
MTN	internet and cellular service provider
NGO	Non-Government Organization
OPM	Office of the Prime Minister
SW	Short Wave
TC	Town Council
UBOS	Uganda Bureau of Statistics
UNDP	United Nations Development Programme
US\$	United States dollar
UXO	unexploded ordinance



## **Acknowledgements**

On behalf of the Office of the Prime Minister, I wish to express sincere gratitude to all of the key stakeholders who provided their valuable inputs and support to this hazard, risk and vulnerability mapping exercise that led to the production of comprehensive district hazard, risk and vulnerability profiles for the Teso sub-region.

I especially extend my appreciation to the Department of Disaster Preparedness and Management in the Office of the Prime Minister, under the leadership of the Acting Commissioner, Ms. Rose Nakabugo and the Assistant Commissioner, Mr. Gerald Menyha, for the oversight and management of the entire exercise. My appreciation also goes to the District Disaster Management Committees and the entire body of stakeholders who in one way or another yielded valuable ideas, resources and time to support the completion of this exercise.

Our gratitude goes also to the UNDP for providing funds to support this initiative and to the UNDP/OPM Team comprised of Mr. Jose Neil A. C. Manzano, Disaster Risk Management Advisor; Mr. Gilbert Anguyo, Disaster Risk Reduction Analyst; and Mr. Sidney Tupper, Climate Risk Management Specialist, for providing valuable technical support in the organization of the exercise, review of maps and findings, and editing of the profiles.

Finally, the field team led by Mr. Solomon Elungat, Senior Disaster Management Officer and supported by Mr. Moses Banduga, GIS Expert, and Mr. Samuel Lwetutte and Mr. Franco Ojok, GIS Specialists, who painstakingly traversed the sub-region gathering local knowledge, mapping hazards and compiling these documents, deserves our thanks.

### **Hon. Hilary O. Onek**

Minister for Relief, Disaster Preparedness and Management



# EXECUTIVE SUMMARY

This Katakwi 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 Ugandan atlas of disaster risk. 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 Preliminary activities
- Phase II Field data collection, mapping, verification and ground truthing
- Phase III Participatory data analysis, mapping and report writing
- Phase IV Refinement, validation and final map production/reporting

The report characterizes the district in terms of location, geography, climate, administrative arrangements, natural resources, gender demographics by sub-county, livelihoods, agricultural production, poverty and environmental degradation.

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 points of incidence of the hazard.

Katakwi District is located in the North Eastern region of Uganda, lying between longitudes 33° 48' E - 34° 18' E and latitudes 1° 38' N – 2° 20' N. It shares borders with the districts of Napak in the north, Nakapiripirit in the east, Amuria in the west and northwest, Soroti in the southwest, and Kumi and Ngora in the south.

The profile ranks endemic hazards in ten classes: floods, hail and lightning storms, crop and animal disease, land conflict, extended drought and food insecurity, environmental degradation, cattle rustling/theft, vermin, human epidemic, and pest infestation.

Most sub-counties in Katakwi District have high vulnerability to flooding, drought, bush fires, environmental degradation. However, Katakwi, Katakwi Town Council, Toroma and Omodoi have low vulnerability to drought, crop/animal disease, and pests. Hail and electrical storms are a medium threat in all sub-counties except Palaam and Ngariam where the vulnerability is high.

Ongongonja, Toroma, Kapujan, Magoro, Palaam and Ngariam sub-counties register high vulnerability in at least six of the ten hazards, making them particularly prone to disasters of aggregated hazards.



# INTRODUCTION

Like the other districts in the sub-region, Katakwi is prone to a range of hazards and associated disasters including; floods, crop and animal epidemic, severe hails storms, land conflicts, pest infestation, environmental degradation, pest infestation, extended drought, cattle rustling and food insecurity . The disasters reported in Katakwi have been increasing from one year to the next, especially flooding that severely damages infrastructure and livelihoods.

This multi-hazard mapping exercise was implemented in Katakwi district among others to reduce the population's vulnerability to natural disasters and to prepare the district disaster profiles that will aid decision making and planning. Flood and hail storms storm pose risks to life, property and livelihoods, and are compounded by physical exposure and proximity to hazard-prone areas, and by socio-economic, and cultural and behavioral conditions.

This multi-hazard mapping exercise is a critical guide in optimizing development gains and minimizing potential loss of economic resources, infrastructure, physical assets, human resources, and environmental capital.

## **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 to address disaster risks in Katakwi District.

## **Methodology**

The multi-hazard, risk and vulnerability mapping approach employed a people-centered, multi-sectoral, and multi-stakeholder approach. A mapping team led by the Office of the Prime Minister (OPM) and involving representatives from UNDP and district sector offices deployed on a field mission to Teso sub-region to capture the required information and produce the district profile.

The team employed a variety of data-collection methods including use of a mix-scale approach involving the integration of primary and secondary data. Secondary data were acquired through government sources (relevant ministries, departments and agencies, and the districts in Teso 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 analysed with descriptive statistics and remote sensing technology.



## The mapping exercise involved four critical phases as follows:

- Phase I Preliminary activities
- Phase II Field data collection, mapping, verification and ground truthing
- Phase III Participatory data analysis, mapping and report writing
- Phase IV Refinement, validation and final map production/reporting

### Phase I: Preliminary Activities

In this phase the mapping team undertook a series of planning and programming activities before start of field activity including holding meetings with relevant teams, mobilizing required resources, acquiring required equipment and materials, review of relevant literature, establishing relevant contacts and developing a checklist of activities to be undertaken in Phase Two.

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

The phase was also useful for preparing the resource deployment plan, and outlining procedure and field work plans, etc. It articulated, among other issues, the utilization of various stakeholders 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.** A preliminary field meeting was held in each district to capture key local issues related to disaster incidence and trends. The meetings gave opportunities for the mapping team and stakeholders to identify other key resource persons and support staff from within the local community for consultation.

**Stakeholder participation practices.** Stakeholder participation was a key component of the mapping exercise. The team conducted consultations with district technical sector heads under the overall purview of the District Disaster Management Committee (DDMC) involved in the ground truthing exercises to ensure district leadership and ownership of the data and results. During exit meetings, stakeholders, particularly those at district level, were given the opportunity to validate, update and also contribute any other relevant information vital to the mapping process.

**Capture of spatial data.** Spatial data were captured and complemented by base maps prepared at appropriate scales. The base maps contained relevant data including location of existing social-infrastructure and services, district area boundaries, environmental elements, forest areas, utilities like roads, drainage and river course, contours and flood prone settlements.

**Secondary data or desktop research.** A desk review of relevant documents at the district and other umbrella organizations, including policy and legal documents, previous maps/report and studies, was conducted. A checklist summarized the required information according to the multi-disaster risk indicators being studied/mapped. Data from documents were analysed using various methods including content analysis.

**Critical observation and ground truthing.** This approach was used to critically assess the conditions, nature and location of disaster prone zones, “current human activity” and settlement patterns along disaster prone areas. Critical observation and ground truthing included inspection and observation of social infrastructure, major household economic activities being practiced, natural drainage lines, rivers etc. Non-mappable and non-physical situations were captured through remote sensing (e.g. satellite images) and physical observation.

**Main instruments of data collection.** The main instruments used for data collection were manuals of instructions (guides to mapping assistants), use of key informant guides and notebooks, high resolution GPS receivers, digital camera for taking critical photographs, high resolution satellite images and base maps/topographic sheets of the mapping areas.

**Exit/feedback meetings with stakeholders.** After field activities and data collection, feedback and exit meetings with stakeholders were carried out in the district. These meetings provided additional information regarding the disaster mapping exercise, validated the data generated, and provided clarity on the expected outputs and the way forward into the next phase.

### **Phase III: Data Analysis and Verification**

**Analysis of collected data.** The mapping team and district government officials analyzed the collected data, and developed thematic disaster maps by integrating features generated from GPS data with base maps and high resolution satellite images. The main activities at this phase included:

- 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 of different data and information



**Data editing, coding and cleaning.** Data entry clerks, data editors and coders digitized, edited, coded and cleaned data collected using the various tools mentioned above. Both qualitative and quantitative data obtained from the field were entered via a data entry interface customized to the layout of the field data forms. Data coding and analysis started immediately the data was available. Arrangements were made in the field to handle manual editing and coding as and when data was received from the field crew. Furthermore, data entry, verification, screen editing and system development followed sequentially to enable the preparation of draft maps.

**Data analysis package.** The mapping team analysed acquired data using MS Word and MS Excel for Windows, and spatial data using ArcGIS 10 software and mobile GIS applications. They performed rapid and systematic GIS overlays 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, they merged it for cross tabulation and eventual production of thematic maps for the various types of hazards.

**Generation and appraisal of draft maps:** Prioritization set by the districts determined the various hazards presented on the thematic maps. The team convened a field workshop to present, appraise and validate the risk and vulnerability maps with respect to their accuracy and completeness. Information gaps were identified and filled in the final risk and vulnerability maps.

#### **Phase IV: Refinement, validation and reporting**

A final workshop was conducted by the OPM to facilitate validation and dissemination of the district hazard, risk, and vulnerability profile to relevant partners.

### **Brief Overview of the District**

#### **Historical background**

Katakwi District regained its district status in 1997 through an Act of Parliament. Its earlier status as North Teso District was cancelled in 1980. The District was taken out of Soroti District in 1997 and in July 2005 Amuria district was taken out of Katakwi district.

#### **Geography**

Katakwi District is located in the North Eastern region of Uganda, lying between longitudes 33° 48' E - 34° 18' E and latitudes 1° 38' N – 2° 20' N. It shares borders with the districts of Napak in the north, Nakapiripirit in the east, Amuria in the west and northwest, Soroti in the southwest, and Kumi and Ngora in the south. The District Headquarters is in Katakwi Town Council, a road distance of about 380 km from Kampala, the National capital.

Table 1 lists the areas of the various geographical elements of the district.

**Table 1 District area**

	Km <sup>2</sup>
Total area	2,527
Land area	2,177
Water area	177
Land under cultivation	720
Area under forest	98.2
Other	53.47

## **Geomorphology**

The district landscape is generally a plateau with gently undulating slopes in certain areas.

## **Altitude**

The district lies approximately between 1,036m – 1,127m above sea level

## **Climate**

The climate is characterized by two seasons: a wet season during March – October and a dry season during November – February. The mean annual rainfall varies from 1000mm – 1500mm. The rainy season has a principal peak due around March - June and a minor peak around August – October. December and January are usually the driest months. Recent rainfall has been unreliable and unpredictable.

The district sometimes registers extremes of both very heavy rainfall and drought. In some cases heavy rainfall is accompanied by hailstones. Water logging as a result of heavy down pour is sometimes experienced in many areas, especially in Ngariam and Magoro sub-counties. Katakwi District records a mean annual maximum temperature of 31.3°C and a mean minimum of 18°C.

Relative humidity ranges from 66% to 83% at 0600 GMT in the morning, and 35% - 57% at 1200 GMT, thereby reducing chances of rainfall.

## **Soils**

The soils are mainly of ferralitic type (sandy sediments and sandy loam). They are well drained and friable. Bottomland contains widespread deposits of alluvium. The land resource is fertile and productive. The most fertile areas lie in the North to Eastern part of the district.

## **Vegetation**

The vegetation of Katakwi district is largely savannah grasslands dotted with shrubs and trees, dominated by Acacia, Conbretum, Piliostigma, Butyrosperum paradoxum and Hyperenia species.



## Geology

Geological surveys have revealed that Precambrian age basement complex rock of granites, mignalites, gneiss, schists and quartzites underlie most areas.

## Administrative data

The Distribution of Administrative Units and Local Governments are as follows: -

**Table 2 Distribution of administrative units and local governments**

Level	Number
County (L.C.IV)	2
Sub-county (L.C.III)	9
Town Council (L.C.III)	1
Town Boards	2
Parish (L.C.II)	54
Wards (L.C.II)	3
Village ( L.C.I)	3352

**Source:** DPU Data Bank, 2005 and Census Provisional Results, 2002.

## Demographics

The district population of Katakwi according to the year 2002 final census was 118,928, of which 57,401 (48.3%) are male and 61,527 (51.7%) are female. Katakwi sub-county was the most populous with 26,687 inhabitants, as shown in Table 3.

**Table 3 Population distribution by sub-county and gender (2002)**

County	Sub-County	Male	Female	Total
Usuk	Kapujan	4,383	4,805	9,188
	Katakwi	12,902	13,785	26,687
	Katakwi T/C	2,769	3,143	5,912
	Magoro	5,567	6,012	11,579
	Ngariam	8,065	8,362	16,424
	Omodoi	5,063	5,494	10,557
	Ongongoja	4,733	5,051	9,784
	Toroma	4,642	4,858	9,500
	Usuk	9,277	10,017	19,294
TOTAL		57,401	61,527	118,928

**Information Source:** Uganda 2002 Population and Housing Census.

- Of the total district population, 2.38% are urban while 97.62% are rural.
- The number of households is estimated at 25,811 with a mean average of 4.6 persons.
- The gender ratio (female/male) decreased from 1.07 in 2002 to 1.05 in 2011 (projected), possibly indicating recovery from male-skewed death rates during the conflicted 1980s.

**Table 4 Population projection by sub-county and Sex (2011)**

County	Sub-County	Male	Female	Total
Toroma	Kapujan	6,330	6,789	13,119
Usuk	Magoro	8,040	8,493	16,533
	Omodoi	7,312	7,762	15,074
	Toroma	6,704	6,861	13,565
	Katakwi	18,633	19,473	38,106
	Katakwi T/C	4,001	4,441	8,442
	Ngariam	4,578	5,023	9,601
	Ongongoja	6,835	7,135	13,970
	Palam	7,065	6,790	13,855
	Usuk	13,398	14,151	27,549
Total		82,896	86,918	169,814

**Note:** these figures are based on projections of the 2002 census data, prorated with the factor 1.428 (UBOS)

The urbanization rate for the district is +5%.

**Table 5 Population growth rate**

Years	1961- '69	1969-'80	1980- '91	1991-'02
(%) Growth rate	0.6	2.2	- 1.9	6.45

The population growth rates shown in Table 5 for the period 1961-1991 are derived from Soroti District of which Katakwi was a part. The negative growth rate for the period 1980-91 is attributed mainly to the high death and migration rates during the insurgency, civil strife and cattle rustling which prevailed in the region during this period.

Table 6 shows the relative sizes and population densities of the Katakwi sub-counties.

**Table 6 Population density by sub-county (2002)**

County	Sub-County	Total Population	Land area (sq. km)	Population Density
Usuk	Kapujan	9,188	79.39	117.04
	Katakwi	26,687	272.60	100.00
	Katakwi T/C	5,912	13.0	561.15
	Magoro	11,579	231.66	48.63
	Ngariam/Palam	16,424	642.29	28.00
	Omodoi	10,557	N/A	N/A
	Ongongoja	9,784	N/A	N/A
	Toroma	9,500	N/A	N/A
	Usuk	19,294	N/A	N/A
	Sub-total	118,928	2,177.23	56.59
Total		118,928	2,177.23	56.59





Table 7 shows the age distribution of the district population. Note that almost 69% of the population is younger than 20 years of age.

**Table 7 Functional age groups (2002)**

Age Group	AGE (Complete years)	TOTAL	PERCENTAGE
Population for immunization	0 – 4	31,246	18.40%
Pre-school age population	0 – 5	34,816	20.50%
Primary school age population	6 – 12	36,510	21.50%
Lower Secondary age pop.	14 – 17	14,944	8.80%
Child population	0 – 17	94,247	55.50%
Teen-age population	13 – 19	45,850	27%
Youth population	18 – 30	36,340	21.40%
Adult Population	18+	75,567	44.50%
Females of reproductive age	15 – 49	40,416	23.80%
Productive age group	15 – 64	89,662	52.80%
Elderly	Above 60	9,340	5.50%

**Note:** According to analysis of the Census 2002 Population & Housing Census results. The district population was 94.7% Christian in 2002, as shown in Table 8.

**Table 8 Population by denomination**

Denomination	Proportion (%)
Catholic	59.2
Anglican	30.6
Pentecostal	4.6
Moslem	1.0
Seventh Day Adventist	0.3
Others	2.1
None	2.2

**Information Source:** Uganda 2002 Population and Housing Census

### Ethnicity

The people in the district are mainly Nilo-Hamites whose ancestors came from the Ethiopian highlands and the remainder are Bakenyi of Bantu origin.

### Other demographic indicators

Table 9 provides rates of birth and death and related data. In general, Katakwi lags the country in development according to many of these indicators.



**Table 9 Demographic indicators**

Indicator	Katakwi	Uganda
Sex ratio (Males per 100 females)	93.6	96.5
Dependency ratio (per 100 productive pop.)	89.39	104
Crude Birth rate (per 1000 Pop.)	48.5	52
Crude death rate (per 1000 Pop.)	17.9	16
Total fertility rate	6.35	6.9
Infant mortality rate (per 1000 live births)	116	97
Under 5 mortality rate (per 1000 live births)	192	174
Maternal Mortality rate (per 100,000 live births)	N/A	506
Contraceptive prevalence	N/A	15
Life expectancy at birth (years)	46	48
Urban distribution population (%)	2.0	11.3
Child nutritional status- wasted ( %)	N/A	5.3
Child nutritional status- stunted (%)	N/A	38.3

Table 10 shows a high proportion of children in Katakwi with just one or no parent. Being without a father is more than three times more likely than being without a mother.

**Table 10 Parental survival (For children below 18 years)**

	Absolute number	(%)
Both parents alive	55,477	84.05
Father dead	8,709	13.19
Mother dead	2,717	4.12
Both parents dead	1,368	2.07
Don't know	420	0.64

**Source:** Uganda 2002 Population and Housing Census.

## Natural resources

### Water

The water resources in Katakwi consist of open water bodies (surface sources), ground water (sub-surface) and rain-harvest. Katakwi District has an area of 177 sq. km covered by water. The District has two minor lakes (Bisina and Opeta) in its border with Kumi and Ngora districts and one seasonal river (Kiriik) flowing from Karamoja. It also has a large swamp area. Water from these various sources is put to multiple uses including human, livestock and wildlife consumption. In addition, the open water sources being rich in bio-diversity are a source of fisheries resource.

Wetlands occupy the transition between open water bodies and terrestrial eco-system and perform important regulatory functions. Rainfall is the principal contributor of water to the surface bodies. Ground water is found in aquifers, which are water-bearing formations with



hydrological characteristics that allow water to be extracted in significant amounts through the use of boreholes and dug wells.

The productive aquifers are largely found in weathered bedrock and regolith over-lying crystalline basement rocks and in faults and fractures in the basement. Table 11 shows the average hydrological parameters In Katakwi District.

**Table 11 Sub-surface water sources**

Yield (m <sup>3</sup> /hr)	2.6
Drilling depth (m)	82.0
Regolith thickness (m)	25.9
Water level (meters below ground level)	13.0

**Source:** DWD, 1993: Water Action Plan; Rapid Water Resources Assessment. State of the Environment report for Uganda 1996.

### Forest resources

Table 12 summarizes the forest resources of the district.

**Table 12 Forest resources:**

District area under Forest (km <sup>2</sup> )	26.15
Natural forest cover (km <sup>2</sup> )	23.46
Man-made forest cover (km <sup>2</sup> )	0.52
Number of government tree nurseries	2
Number of private tree nurseries	7
Number of NGO/CBO nurseries	2
Number of agro Forestry sites	16
Number of Natural forests	3
Number of licensed pit sawyers	3

The common tree species include: Viteria, Combetrum, Terminalia, Ficus, Tamarindus, Albizzia and Acacia

### Mineral resources

The mineral potential of Katakwi District has not yet been prospected. There has never been any full-scale geological study to establish the minerals present in the district. However, the salty taste of water from the sub-surface sources especially in Katakwi Town Council and Katakwi sub-county seem to indicate the presence of some mineral deposits. An extensive geological survey is required to establish the mineral potential in the different parts of the district.

## **Energy sector**

Katakwi district has no electricity supply. The District is planned to benefit from Uganda Electricity Distribution proposed 33 kilovolt feeder power line from Soroti to Moroto and Kotido. A dispatch sub-station for the line location is in Opuyo near Soroti Municipality, a distance of about 62 km to Katakwi District Headquarters. The demand for electricity supply in Katakwi town is rising.

The anticipated heavy capital outlay seems to be the major obstacle to the proposed power line. However erection of electric poles has started from Katakwi Town towards Napak and Moroto districts. At the district headquarters small generators and photo-voltaic systems power equipment.

## **Petroleum products**

The private sector is being encouraged to get involved in the supply of petroleum products to the district. At the moment there is only one filling station in the district run by Caltex Petrol Service Station Ltd. Construction of a second station has stalled.

## **Solar energy**

Solar energy has good potential in the district but its use is still very low, found only in the district administration offices, a few health facilities and homes of very few individuals. The cost of solar systems is very high for the financial resources available to most people.

## **Bio-mass**

Firewood and charcoal are the major sources of cooking fuel in rural and urban Katakwi District. The adoption of energy saving technologies in households and institutions is still slow.

## **Transport and communication**

### **Transport**

Katakwi District has a trunk road of 53 km between Soroti and Oroti and rural feeder roads of 314 km of the feeder roads, 264 km are passable by vehicle. These roads are plied by all categories of vehicles.

Dugout canoes provide limited transport to cross Lake Bisina and Lake Opeta to Kumi District. A ferry would be viable on these water routes.

The flat landscape of the District presents a good potential for aviation, which could be exploited in future as the economy grows. An airstrip at Olilim in Ngariam Sub-county needs to be improved to the status of an airfield.



## Telecommunication

Katakwi District Headquarters is connected to the rest of the world on an international telephone exchange through the Uganda Telecom Limited network. It is also connected to the mobile telephone networks through MTN-Uganda, Airtel, Mango and Warid. At the District headquarters, scanning services are available in the Administration and Health departments. E-mail services are available in the various offices by use of modems. The major communication challenge now is to extend the service to the major institutions and other areas. The district has one post office in Katakwi Town Council, which needs renovation and expansion to meet the current and future needs of the district. Private courier operators extend their services to the district through local agents or sub-branches established in Soroti, 52 km distant.

## Radio communication

SW, MW and some FM radio broadcasts can be received in Katakwi District. The FM radio audience is large especially for those stations with programmes in the main local dialect, Ateso. Currently there is one FM radio station in Katakwi District called Joshua FM at Abela Rock, with transmission to the whole of Katakwi District.

## Education infrastructure

Table 13, Table 14 and Table 15 give an indication of the district's education infrastructure.

**Table 13 Primary education**

Number of Primary Schools	72
Number of permanent classrooms	348
Number of semi-permanent classrooms	153
Number of temporary classrooms	327
Pupils-classroom ratio	16:1
Teacher-house ratio	5:1
Number of teacher resource centres	5
Educational Assessment and Resource Service Centre	1

**Table 14 Secondary education**

Number	Government	Private	Community	Total
Number of secondary schools	5	4	3	12
Number of classrooms	29	9	12	50

**Table 15 Vocational/technical education**

Category	Government	Private	Community	Total
Number of Technical schools	1	0	0	1
Number of Vocational schools	1	0	0	1

**Data Source:** Education MIS, 2008

Table 16 shows the health facilities available in the district.

**Table 16 Health infrastructure (as of April, 2011)**

Health Facility	Government	Private/NGO	Total
Health Centre IV	2	0	2
Health Centre III	5	2	7
Theatre	1	0	1
Laboratory	3	2	5
Maternities	7	2	9
Clinics	0	11	11
Drug shops	0	31	31

**Data Source:** Katakwi HMIS

**Note:** The number of drug shops is expected to rise within the year as many more have applied for operational licenses.

## Justice institutions

**Table 17 Justice system**

Police Stations	1
Police Posts	5
Prisons	1
Courts (Grade II)	2
Family And Children Courts	2
Law Firms	0

A Magistrate Court was constructed at the District Headquarters with funding from the Danish International Development Agency, DANIDA.

## Settlement patterns:

Human settlement in Katakwi District is exhibited in three forms:

- Sparse settlements,
- Clustered settlements, and
- Nucleated settlements

The population density of the district indicates that most of the land is sparsely settled. Settlement intensifies in parishes along the border with Karamoja, a phenomena caused by violent cattle rustling incursions from the neighbours.

Clustered settlements in the district are mainly found in the emerging rural growth centres as a result of petty trade. However, over the recent past this kind of settlement is decreasing as population displacement has decreased with improved security. On the other hand, the Katakwi Town Council urban area has nucleated settlement with an estimated population density of 561.2 persons per km<sup>2</sup> (2002 census).



## Socio-economic background and livelihoods

Traditionally many of the people of Katakwi District are pastoralists, earning their livelihoods through livestock rearing and crop production at subsistence level. This became difficult in 1986 when cattle rustling by the Karimojong intensified and in 1987 civil strife in the Teso region aggravated the situation.

During this period many lives and much property were lost and many families disintegrated. Most of the productive labour force was either killed, maimed or displaced. Animal traction, which had been the major means of opening land for agricultural production was unavailable to many. The whole Teso region became impoverished as the economic base was depleted.

With the gradual return of peace in the early 1990's the population began to resettle and engage in small-scale production activities. Through individual and some NGO efforts, an economic recovery brought rising levels of livestock and crop production. However, persistent cattle rustling continues to hobble growth.

About 64% of the population of Katakwi lives on means below the poverty line, defined as US\$1 per person per day (World Bank). To diversify sources of household incomes, government and NGOs have been introducing new crop varieties and economic activities. Some of these new activities include: agro-processing industries, apiculture, brick making, fish farming and stone quarrying. A road link from Magoro sub-county to Kumi district through Tisai Island would facilitate produce marketing and obtaining inputs.

Table 18 shows the proportions of various livelihood activities in the Katakwi population.

**Table 18 Livelihood activities**

Activities	(%)
Subsistence farming	81.6
Commercial farming	1.3
Trade	3.8
Employment income	5.9
Family support	5.8
Others (including small scale Industries)	1.6

# HAZARDS

Table 19 shows the distribution of hazards in Katakwi sub-counties. The totals show that some hazards occur throughout the district (floods, crop and animal disease, severe storms) and that some sub-counties experience more hazards than others. Ongongoja, Usuk and Magoro have nine of the ten hazards endemic.

**Table 19 Katakwi district hazard summary**

Sub-counties	Floods	Crop and animal epidemic	Pest infestation	Land conflict	Human Disease	Environmental degradation	Drought food insecurity	Vermis	Cattle rustling	Hailstorms / lightning	Total
Ongongoja	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	10
Usuk	✓	✓	✓	✓		✓	✓	✓	✓	✓	9
Katakwi	✓	✓		✓						✓	4
Katakwi TC	✓	✓		✓	✓	✓	✓	✓		✓	8
Kapujan	✓	✓		✓	✓	✓	✓			✓	7
Toroma	✓	✓		✓	✓	✓	✓			✓	7
Omodoi	✓	✓		✓		✓	✓		✓	✓	7
Magoro	✓	✓		✓		✓	✓	✓	✓	✓	8
Ngariam	✓	✓	✓	✓			✓		✓	✓	7
Palaam	✓	✓		✓		✓	✓		✓	✓	7
Total	10	10	3	10	4	8	9	4	6	10	74



Table 20 characterizes each hazard in terms of nature and location of incidence.

**Table 20 Hazard and risk mapping**

Hazard	Status	Sub-County	Rank
Floods See Figure 1	Incidences of floods reported and include but not limited to; Toroma-Magoro, Usuk-Ongongoja, Abulengorok-Adacar, Usuk-aketa, Usuk-Orungo corner, Aliakamer-Aberilela roads and Ajeleik bridge. The floods also washed away crops from gardens in Apuuton, Usuk, Ongema, Kokorio, Okoch, Obwobwo, Okuda, Omukuny Orimai and Ominya. Extreme water logging is recorded.	District wide but most severe in Kapujan, Toroma, Magoro, Ongongoja, Ngariam and Palaam.	1
Hail storm and lightning See Figure 2	The district experiences two seasons i.e. wet season; March – October and dry season; November – February. The rainy season has a principal peak due around March- June and a minor peak around August – October.	District wide; severe in Ngariam, Palaam and Magoro sub-counties	2
Crop and Animal Disease See Figure 3	Incidence is most frequent during rainy seasons in the parishes of Adacar, Ongongoja, Obwo-Obwo, Aketa, Okuda, Abela and Usuk. Associated with loss of livestock and crops, poor yields, poverty and food insecurity. In 2011 the authorities imposed a six month quarantine.  Common animal disease incidents reported include: Newcastle disease, foot and mouth disease, east coast fever, liver flux, lumpy skin, common rabies and swine fever cases in Ongongoja especially in Ongotunyo, Okuda, Aketa, Obwo-Bwo and Ongongoja.  Sorghum shoot fly, groundnut roset, cassava brown streak and orange fruit fly	District wide but more severe in Kapujan, Ongongoja, Palaam, Ngariam, Magoro and Usuk sub-counties.	3
Land conflict See Figure 4	Land conflict related incidences reported in the whole district, attributed to population increase, greed, unclear boundaries, poverty and inadequate land titling processes. The conflicts occur between households, clans, institutions and communities, and between individuals. Incidences of death, hatred, displacement and destruction of property are recorded.	District wide but more severe in Kapujan and Ongongoja	4



Hazard	Status	Sub-County	Rank
Drought and food insecurity See Figure 5	Incidences are common in Ongongoja Usuk and Ngariam resulting in malnutrition, deepening poverty and less productivity of the population. It can also lead to theft and high expenditure by government.	District wide but more Severe in Ongongoja, Ngariam, Toroma, Kapujan and Palaam	5
Environmental Degradation See Figure 6	Incidence of degradation reported in the district. The main livelihoods for the majority of the communities depended on natural resources, e.g., agriculture, which is associated with indiscriminate cutting of trees for charcoal, opening up land for farming and settlement, growing rice in the wetlands, use of improper chemicals for fishing.	Wide spread in all sub-counties in the district	6
Cattle Rustling/Theft See Figure 7	Incidence during the dry season executed by either the indigenous or the Karamoja cattle rustlers.	This happens occasionally in the sub-counties of Palaam, Magoro, Ongongoja and Ngariam	7
Vermin See Figure 8	Common vermin include rodents, birds for sorghum, rice, wild pigs, and monkeys in Kapujan. Hippos in Magoro sub-county destroy crops, especially rice due to their movements.	Ongongoja, Magoro and Kapujan sub-counties.	8
Human disease	Hepatitis B incidence reported in the district.	Usuk, Omodoi, Kapujan and Toroma sub-counties.	9
Pest Infestation See Figure 9	Pests are mainly tsetse flies and aphids, caterpillars. A sweet potato horny worm infestation devastated sweet potatoes; cassava brown streak disease hampers cassava production and striga infestation on cereals has caused severe yield reduction.	District wide but severe in Ongongoja, Kapujan, Toroma, Magoro, Palaama and Ngariam.	10

These maps show the distribution of hazard risk by severity and sub-county and the location of instances of the hazard. OPM field staff gathered the information in December 2013.



# RISKS

## Flood risk

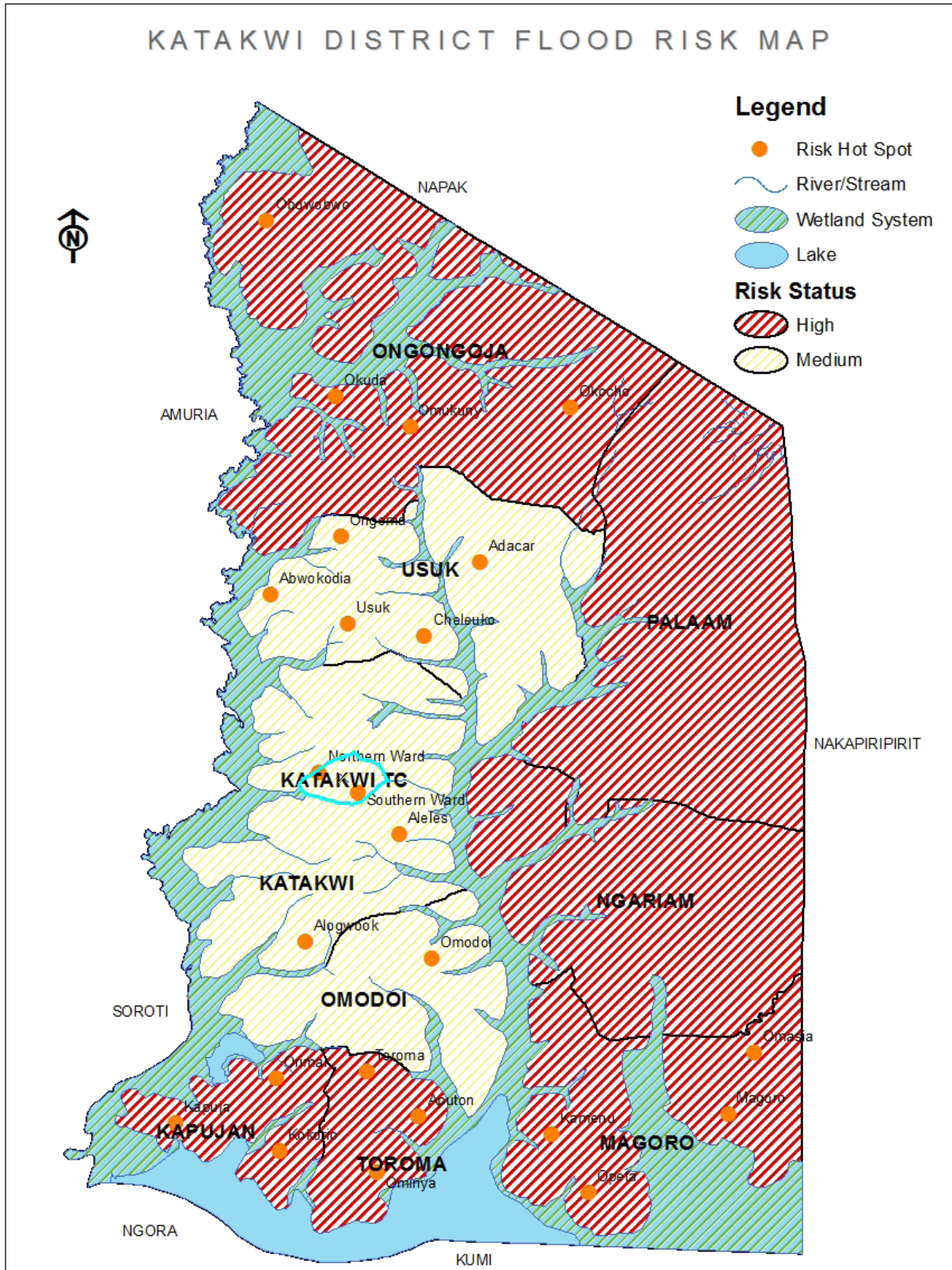


Figure 1 Flood risk map

Weather in the district is erratic, with at times too much rain causing flooding and at other times not enough, with prolonged dry spells which lead to poor crop yields. Water logging and flooding in many parts of the district due to heavy rains in the first and second wet seasons cause severe crop, especially to cassava, reducing the production capacity of the community who depend on subsistence farming for their livelihood.

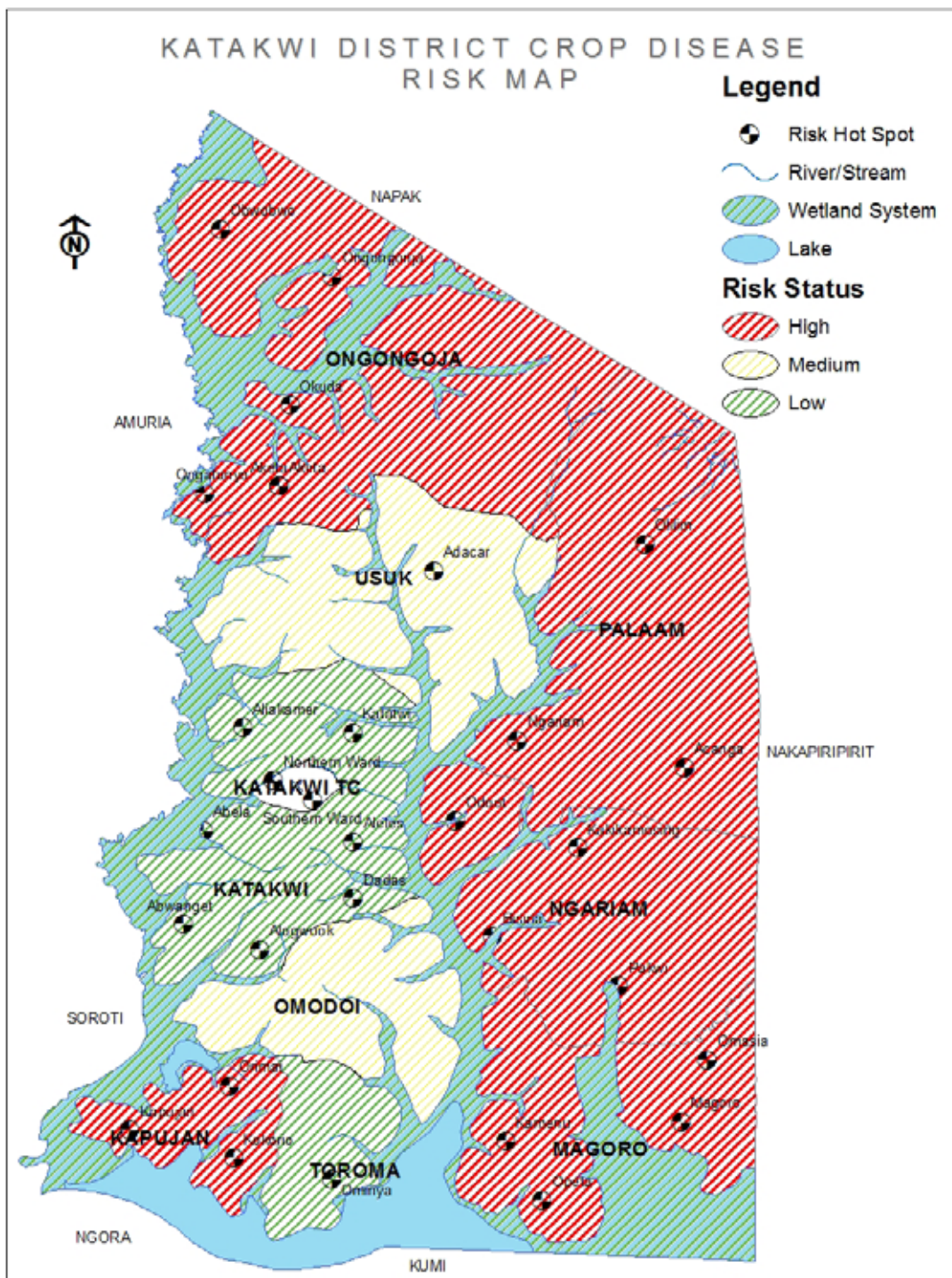
Flood risk is high in Ongongoja, Palaam, Ngariam and Magoro sub-counties, and medium elsewhere in the district. Infrastructure is frequently inundated. Severe flood incidents occurred in 2007 and become frequent in the month of April to July of every year causing inundation of a number of community infrastructure/services.







## Crop and animal disease risk



**Figure 3 Crop and animal disease risk map**

Crop and animal disease risk is high in Ongongoja, Palaam, Ngariam and Magoro sub-counties during the rainy season. Major crop diseases are cassava brown, groundnut rosette, streak virus and sorghum smuts. The seasonal influx of un-vaccinated animals from Karamoja worsens the situation. Omodoi and Usuk sub counties report medium risk levels while Toroma and Katakwi Sub County have low risk situations.





## Land conflict risk

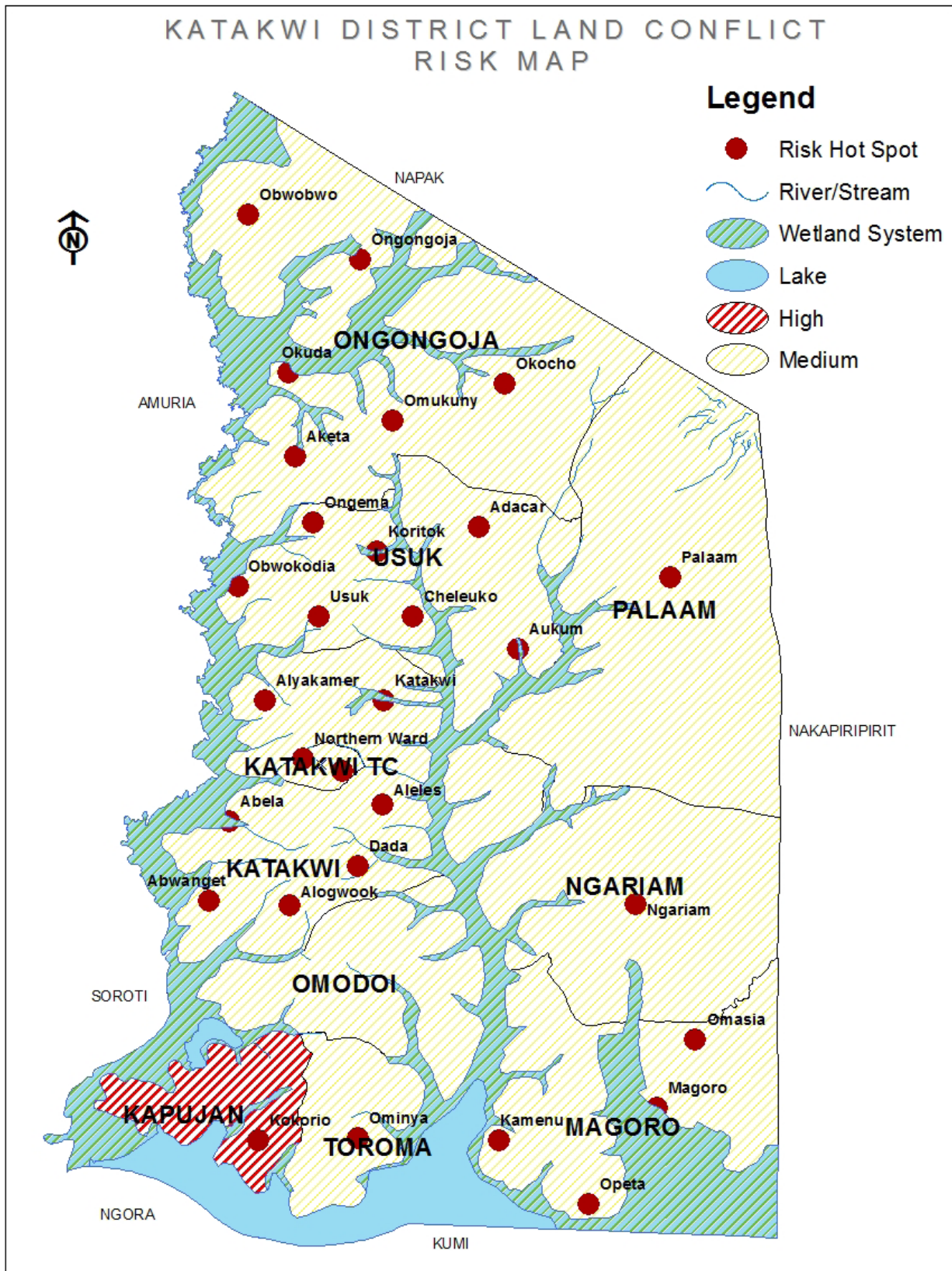


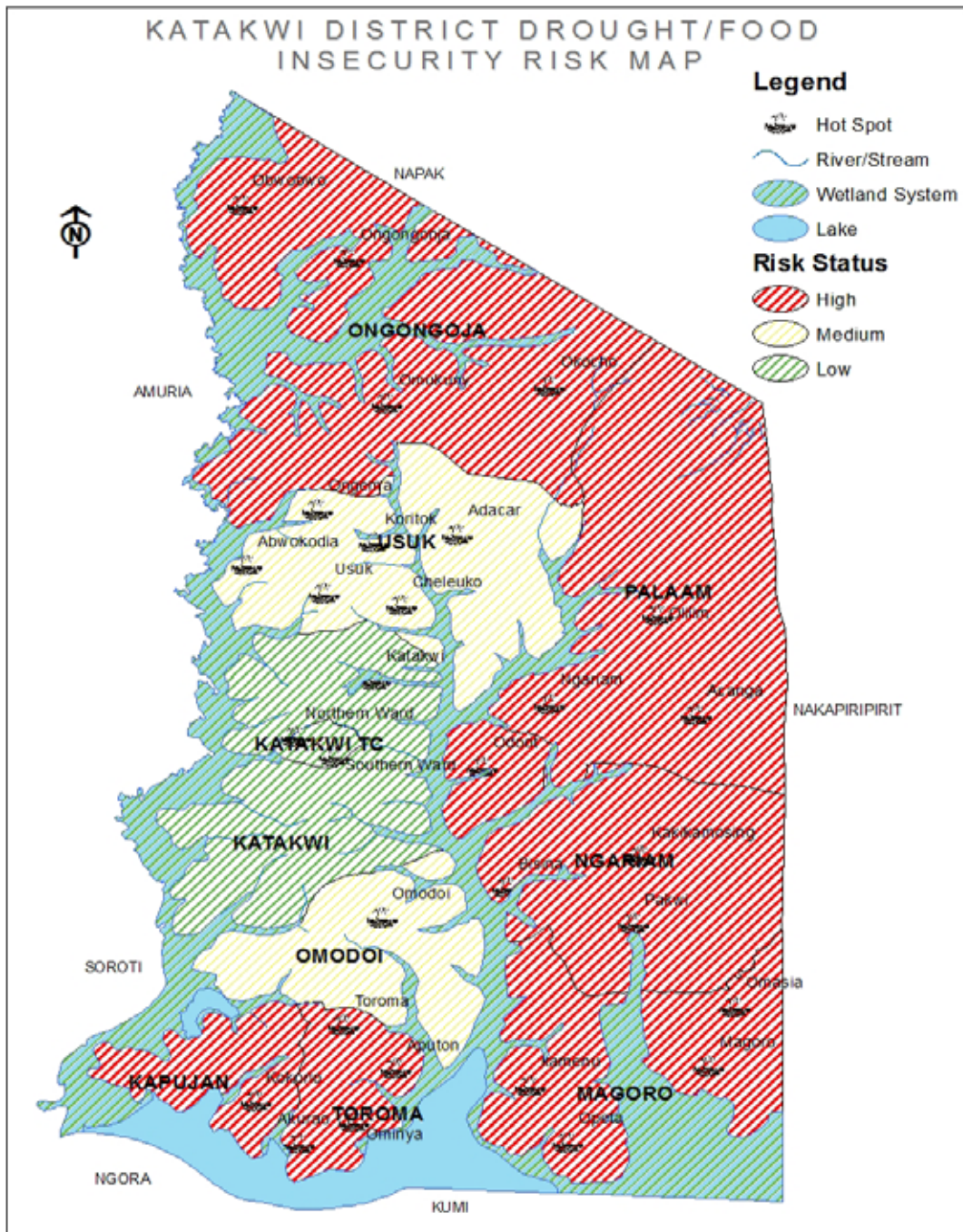
Figure 4 Land conflict risk map

Land conflict risk is high in Kapujan sub-county and medium throughout the rest of the district. Land conflicts are becoming more common with improved security in Katakwi due to disputes arising when people previously displaced by LRA hostilities return to find other people occupying their land. Risk hot spots are distributed across the district in, for instance, Kokorio Parish (Kapujan Sub-County), Kamenu, Opeta, Magoro and Omasia parishes (Magoro Sub-County), Ngariam, Abwnget, Alogwook, Aleles, Dada and Abela parishes in Katakwi sub-County, Northern Ward (Katakwi Town Council), Obwobwo, Ongongoja, Okocho, Omukuny, Aketa, Okuda (Ongongoja Sub-County), Usuk, Cheleuko, Adacar, Aukum, Ongema, Obwokodia and Koritek (Usuk Sub-County).

Major causes of land conflict in the district include unplanned settlements, weak land management systems, breakdown of traditional communal land ownership, ignorance about existing land policies and laws, and political interference. In severe cases, injuries, loss of life, land grabbing, and destruction of property and crops have resulted.



## Drought and food insecurity risk

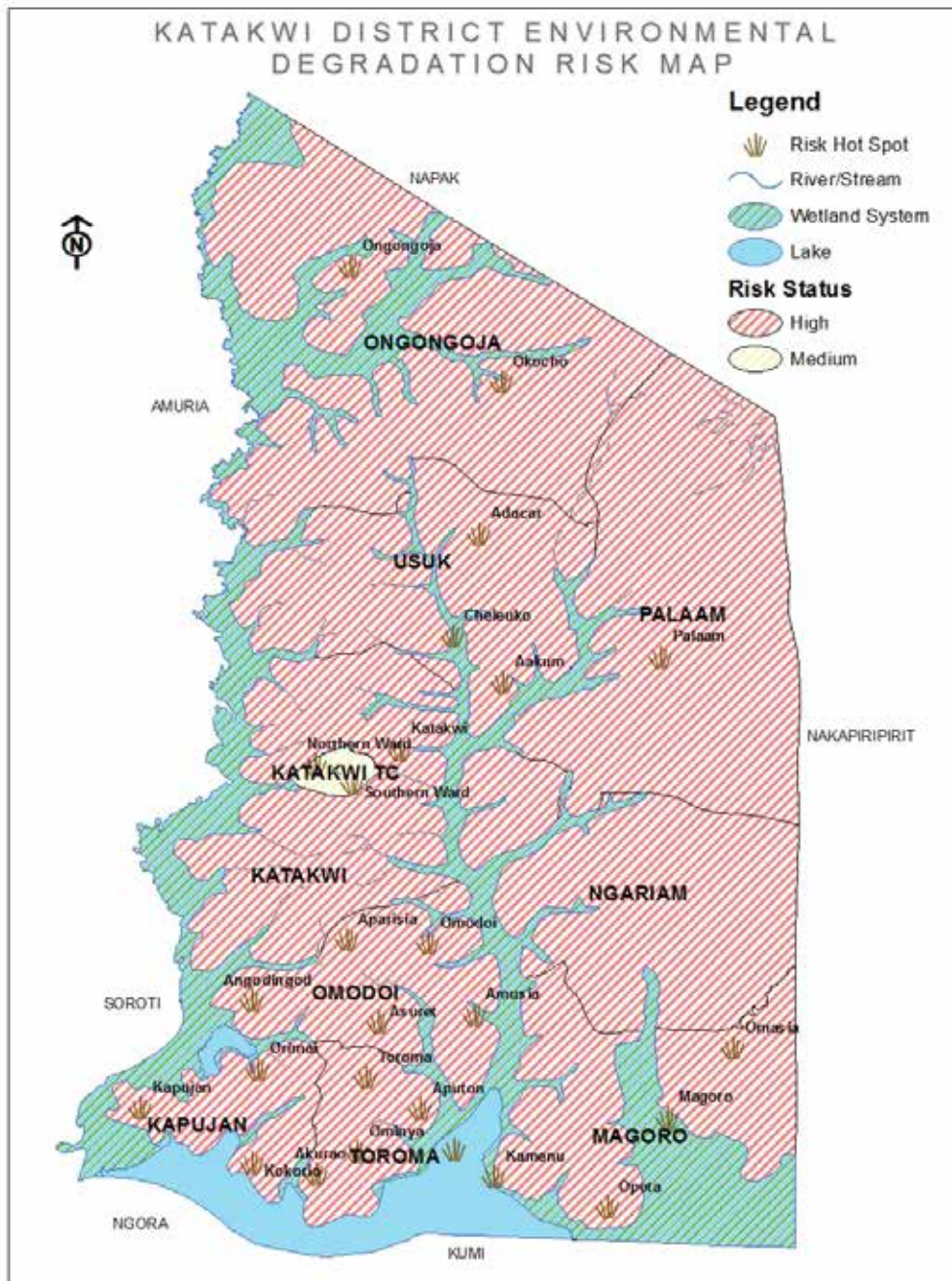


**Figure 5 Drought and food insecurity risk map**

District weather is unreliable with at times too much rain causing flooding and at others prolonged dry spells leading to poor crop yields. Waterlogging, which also reduces crop yields, is a problem. These reduce production capacity of the community who depend on subsistence farming for their livelihoods. Drought risk is high in Ongongoja, Palaam, Ngariam, Magoro, Toroma and Kapujan sub-counties and medium elsewhere in the district. This occurs due to extreme or prolonged dry winds and sunshine that sometimes last more than six months.



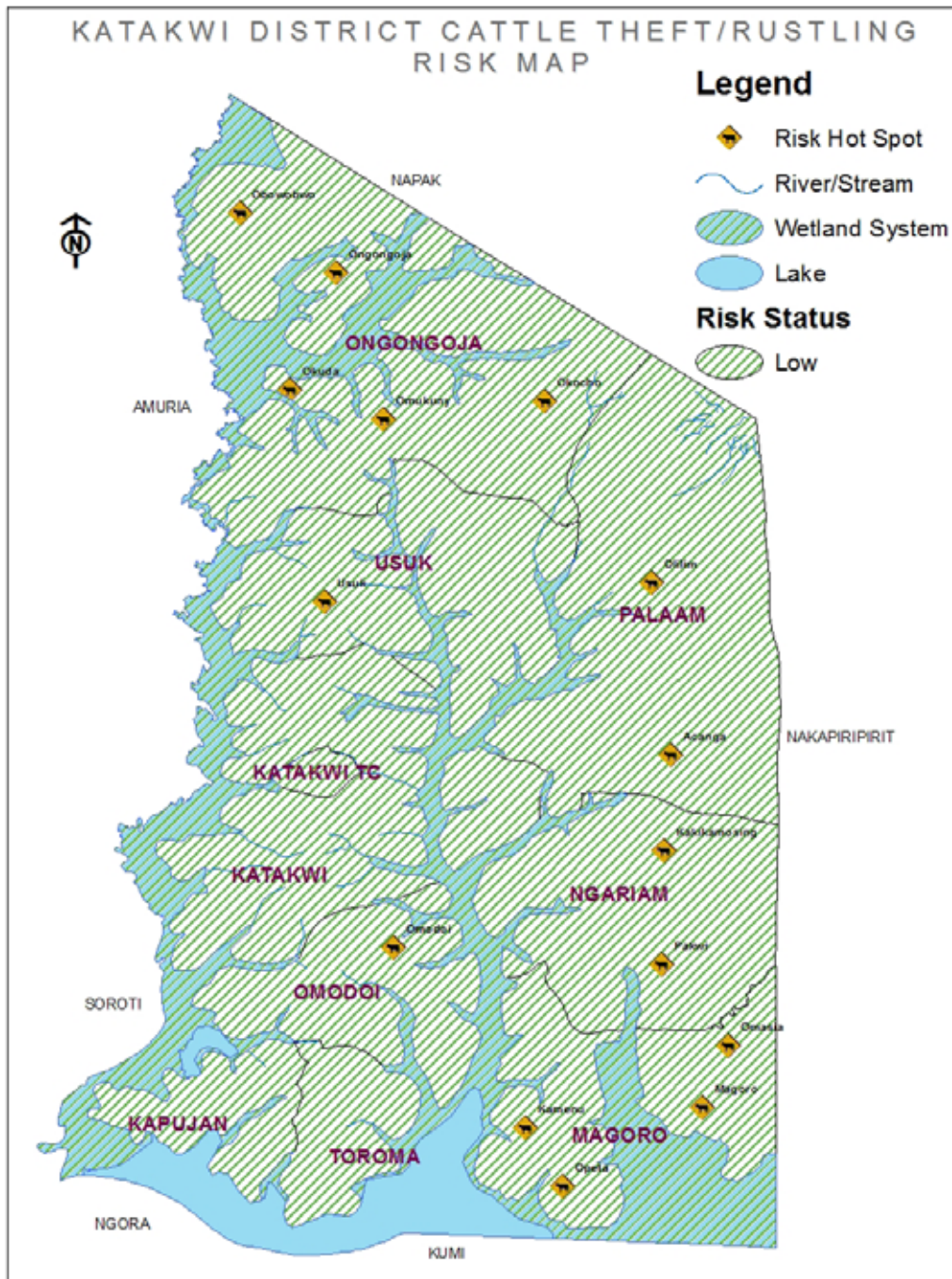
## Environmental degradation risk



**Figure 6 Environmental degradation risk map**

Environmental degradation risk is high in the district except for the town council which reports medium risk. Unsustainable exploitation of ecosystem services through the district has significantly degraded the environment. Causes and manifestations of environmental degradation include contamination of water sources, deforestation due to uncontrolled cutting of trees for charcoal, uncontrolled bush burning, wetland encroachment for rice cultivation, poor sanitation and hygiene in households, inadequate waste disposal and management, deteriorating soil fertility due to poor agricultural practices, destructive quarrying methods, soil erosion, stream siltation and water body pollution.

## Cattle rustling risk

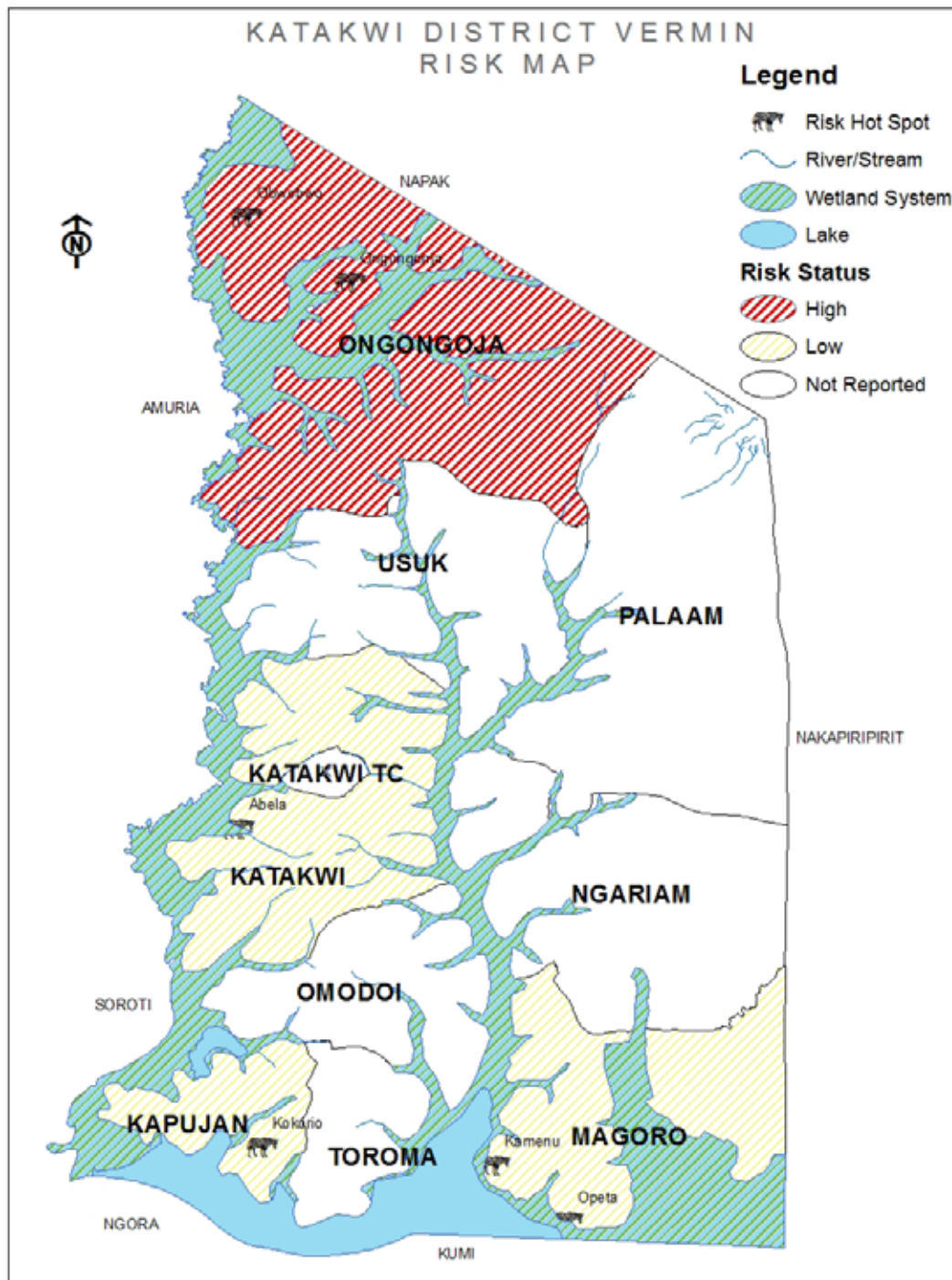


**Figure 7 Cattle rustling risk map**

Cattle theft risk is low throughout the district. Previously widespread cattle raiding has diminished to mere theft. Risk hot spots are reported in Magoro, Omasia, Kamenu and Opeteta parishes in Magoro Sub-County; Obwobwo, Ongongoja, Okuda, Okocho and Omukuny in Ongongoja Sub-County. Other risk hot spots are Kakikamosing and Pakwi in Ngariam Sub-County and Ollim and Achanga in Palaam Sub County.



## Vermin risk



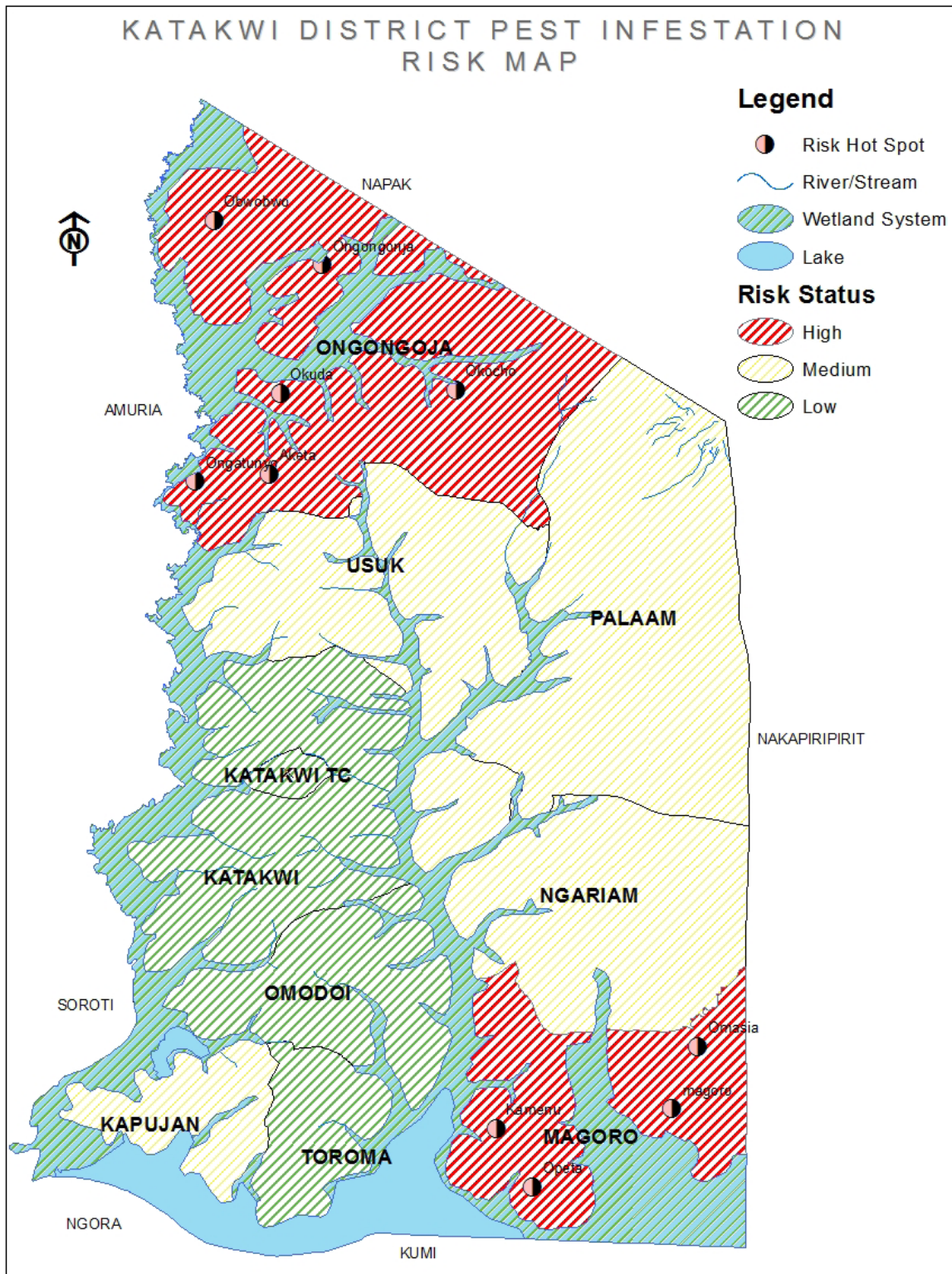
**Figure 8 Vermin risk map**

Problem animals affect communities adjacent to game and forest reserves. Elephants, buffaloes, and warthogs raid gardens, destroying crops and property, with occasional human fatalities.

The risk is high in Ongongoja and low in Katakwi, Kapujan and Magoro sub-counties. The main risk hot spots are Obwobwo and Ongongoja (Ongongoja Sub-County), Abela Parish in Katakwi Sub-County; Kokoroin Kapujan Sub-County and Kamenu and Opeta in Magoro Sub-County.



## Pest infestation risk



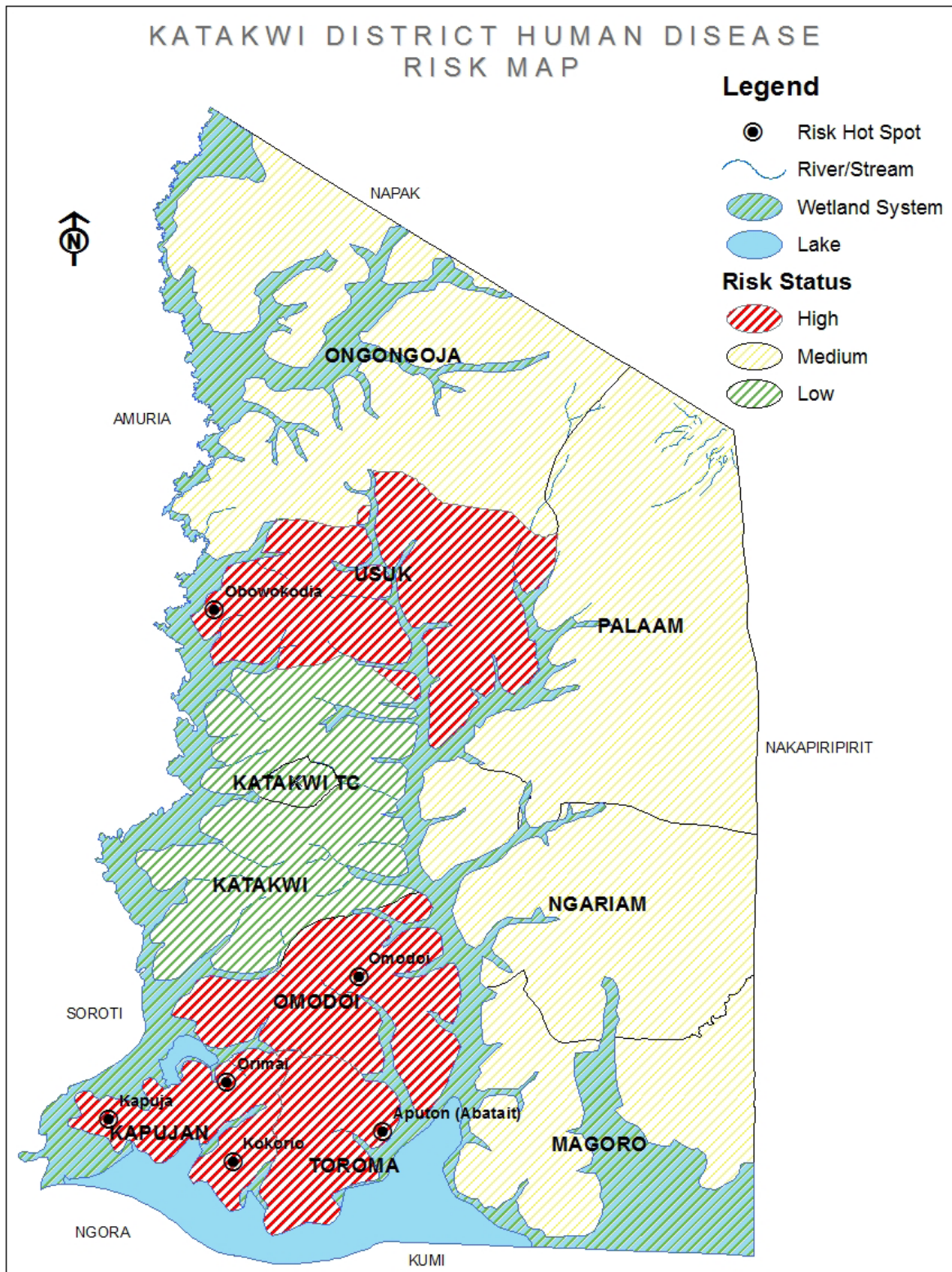
**Figure 9 Pest infestation risk map**

Outbreaks of crop pests and diseases e.g. sweet potato caterpillars, grasshoppers and cassava brown streak viral disease have perennially affected the district.

Pest risk is high in Ongongoja and Magoro, medium in Palaam and Ngariam and low in Omodoi and Katakwi sub-counties and Katakwi Town Council.



## Human disease risk



**Figure 10 Human disease risk map**

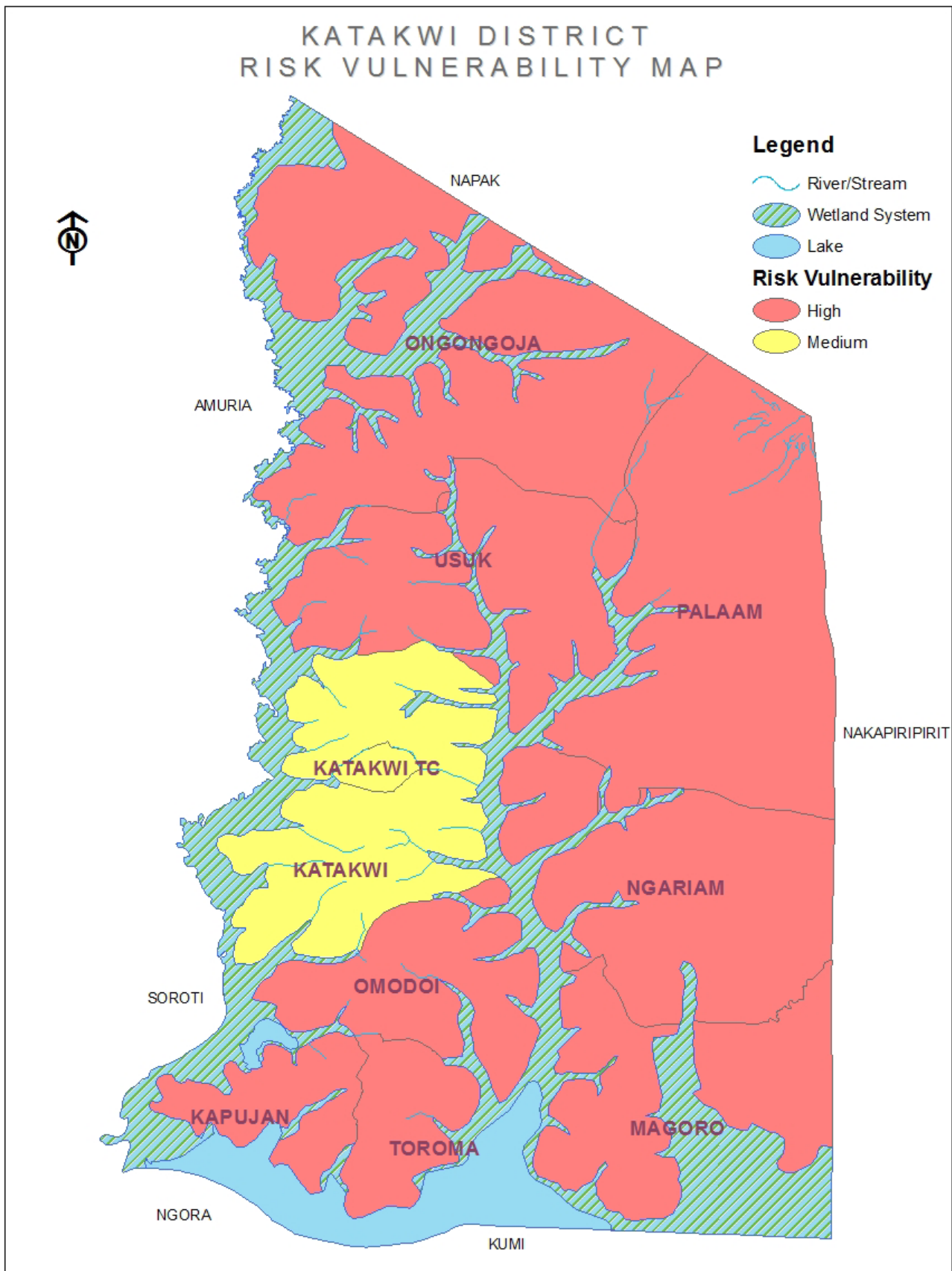
Human disease in the district has yet to reach epidemic levels though cases of Hepatitis B are reported in the district and reported high in Toroma, Omodoi, Kapujan and Usuk sub counties.

# VULNERABILITY

**Table 21 Risk vulnerability**

Hazard	Ongongonja	Usuk	Katakwi	Katakwi TC	Toroma	Omodoi	Kapujan	Magoro	Palaam	Ngariam	
Environmental degradation	3	3	3	2	3	3	3	3	3	3	29
Bush fires	3	3	1	3	3	3	3	3	3	3	28
Floods	3	2	2	2	3	2	3	3	3	3	26
Drought and food insecurity	3	2	1	1	3	2	3	3	3	3	24
Human disease	2	3	1	1	3	3	3	2	2	2	22
Hail storms and lightning	2	2	2	2	2	2	2	2	3	3	22
Crop, animal disease	3	2	2	1	1	1	3	3	3	3	22
Disputes between households	2	2	2	2	2	2	3	2	2	2	21
Disputes over public land	2	2	2	2	2	2	2	2	2	2	20
Disputes between institutions	2	2	2	2	2	2	2	2	2	2	20
Pest infestations	3	2	1	1	1	1	2	3	2	2	18
Cattle rustling	1	1	1	1	1	1	1	1	1	1	10
Vermin	3		2				2	2			9
<b>Score:</b> High = 3, Medium = 2, Low = 1, Blank = Not reported											

## Vulnerability



**Figure 11 Vulnerability map**



Table 21 estimates the relative vulnerability of communities in the sub-counties with respect to the hazards endemic there. The incidence of hazards across the district is not homogeneous, and consequently aggregate vulnerability conditions in Katakwi District vary from one sub-county to another, as is evident in Figure 11.

Based on the frequency of hazard events and the magnitude of loss suffered, Ongongoja, Palaam, Usuk, Ngariam, magoro, Toroma, Omodoi, and Kapujan Sub-Counties are assessed at high risk and vulnerability levels while Katakwi Sub-County and the Town Council rate moderate risk levels.

The significant risks in the most vulnerable sub-counties are, in descending order, environmental degradation, bush fires, floods, drought and food insecurity, human disease, hail storms and lightning, crop, animal disease, disputes between households, disputes over public land, disputes between institutions, pest infestations, cattle rustling and vermin. The major risks in Katakwi town council and Katakwi Sub-County are environmental degradation and bush fires.





# CONCLUSIONS

The multi-hazard vulnerability profile resulting from this mapping exercise combines physical data and information captured from communities using participatory methods in Katakwi District. The method extracts the community perceptions of each hazard with respect to likelihood of occurrence and severity impact. There are variations in the intensity and level of vulnerability perceived from one sub-county to another.

The profile ranks endemic hazards in ten classes: floods, hail and lightning storms, crop and animal disease, land conflict, extended drought and food insecurity, environmental degradation, cattle rustling/theft, vermin, human epidemic, and pest infestation.

Most sub-counties in Katakwi District have high vulnerability to flooding, drought, bush fires, environmental degradation. However, Katakwi, Katakwi Town Council, Toroma and Omodoi have low vulnerability to drought, crop/animal disease, and pests. Hail and electrical storms are a medium threat in all sub-counties except Palaam and Ngariam where the vulnerability is high.

Ongongonja, Toroma, Kapujan, Magoro, Palaam and Ngariam sub-counties register high vulnerability in at least six of the ten hazards, making them particularly vulnerable to disasters of aggregated hazards.

The mapping exercise has explored the importance of spatial information related to disasters in Katakwi District. This information should therefore be integrated with the disaster mitigation plans developed by the Katakwi district local government to plan and minimize the impacts of the disaster.



# DEFINITIONS OF TERMS

**Drought.** Drought is the prolonged shortage of water usually caused by lack of rain. Drought and famine 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 loose 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, naganan, 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.



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