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KARAMOJA
AMUDAT District

HAZARD, RISK AND VULNERABILITY PROFILE

August 2014

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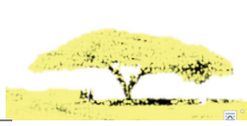

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Acronyms

CBPP	Contagious bovine pleuro-pneumonia
DDMC	District Disaster Management Committee
DRM	Disaster Risk Management
FGD	Focus Group Discussion
GIS	Geographical Information System
GOU	Government of Uganda
GPS	Global Positioning System
HH	household
HIV/AIDS	Human immunodeficiency virus infection / acquired immunodeficiency syndrome
LC	Local Council
NGO	Non-Governmental Organization
OPM	Office of the Prime Minister
SC	Sub-County
TC	Town Council
UNDP	United Nations Development Program

Acknowledgement

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 Karamoja 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.

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Finally, the field team led by Mr. Solomon Elungat, Senior Disaster Management Officer and supported by Mr. Moses Banduga, GIS Expert, Mr. Samuel Lwetutte, Ms. Pamella Drate, GIS Specialists and the entire district technical team 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 Amudat 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	Refining and final map production/reporting

The report characterizes the district in terms of location, geography, gender demographics by sub-county and livelihoods.

Amudat District, part of Karamoja Sub Region, has its geographic centroid at 1°57'N 34°57'E. It is bounded by Moroto District in the north, the republic of Kenya in the east, Bukwo District and Kween District in the south and Nakapiripirit District in the west.

The findings identify 13 hazards, drought , environmental degradation, flood , land conflict, crop and animal disease, human disease, strong wind, vermin and problem animals, bushfire, pest infestation, hail and lightening, industrial accidents and cattle theft as predominate in the district, in order of decreasing risk.

Drought, environmental degradation, flood and land conflict ranked closely as the most dangerous and high-risk hazards for people in Amudat District.

All of the sub-counties have significant vulnerability to disaster, accumulating risk from these hazards. Karita, Loroo and Amudat Sub-Counties record high aggregate vulnerability levels. The least vulnerable, Amudat Town Council, has high risk of drought and land conflict. This aggregated vulnerability to several hazards at once compounds the exposure to disaster risk and the complexity of managing it.

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.

INTRODUCTION

Amudat District is vulnerable to a number of hazards that lead frequently to disasters. They include Floods, Environmental degradation, Industrial accidents, Drought and food insecurity, Crop and animal disease, Land conflicts, Vermin's/Problem animals, Human diseases, Pest/parasite infestation, Cattle theft, Bush/Wild fires, Hailstorms/Lightning and strong winds.

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

Objectives

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

Methodology

The multi-hazard, risk and vulnerability mapping approach employed a people-centred, 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 Karamoja 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, the districts in Karamoja Sub-Region and data bases from other organizations 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	Refining and final map production/reporting

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 insight 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 1 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: Dissemination Workshop

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

Overview of the District

Location

Amudat district is part of Karamoja sub region and was carved out of Nakapiripirit district in 2009, the district is bounded by Moroto District in the north, the republic of Kenya in the east, Bukwo District and Kween District in the south and Nakapiripirit District in the west. Amudat district has one county (Pokot County) with three sub counties and one town council. Amudat to Nakapiripirit is 35km, Amudat to Moroto is 130km, Amudat to Mbale is 160km and Amudat to Kampala is 285km by road.

Terrain

Amudat district has got a gentle slope and rocky terrain.

Administration

Amudat District comprises of 1 county, Pokot and 3 sub- counties and 1 Town council with 9 parishes and 4 wards. The District headquarters is located in Amudat town. The other growing centers include Alakas, Nabokotom, Cheptapoyo, Lokales and Lopedot.

Table 1 Administrative units

County	Sub County/ Town Council	Number Of Parishes	Number Of Villages
Pokot	Amudat	3	4
	Karita	3	35
	Loroo	3	18
	Amudat T/C	4	18

District profile

Amudat was one of the seven districts that were pronounced by the eighth Parliament of Uganda. Unlike others, According to the results of 2002 Population and Housing Census, Amudat District has a projected population of 101,079 persons. The District shares 3km of borderline with the Republic of Kenya on the Eastern side. The District has an area of about 1,638 sq. km.

Population and Demographics

The District has a population of 101,079 people with respective administrative units as shown in the table below. There are also 17510 households living within the 124 villages. Majority of the population is below 15 years with 60% and total fertility rate of 7.2 children per woman during her reproductive age (15-49 years). The population growth of Amudat is 5.4 which is far high above the national level of 3.2.

Climate

The climate is semi- arid, prone to drought of eight months that is August to March. This followed by sparse rainfall for four months (April to July), the dry season (August to March) is characterized by cyclone winds with some dust storms.

Soil

The soils of Amudat are rocky in areas of Amudat Town council and Amudat Sub county and sandy with black cotton soils in some parts of Loroo and Karita sub counties. There is high level of soil depletion due to pastoralism, low vegetation cover, strong and fast running the water during the rainy season.

Vegetation

Amudat is largely covered by scrubs and thickets.

Relevant cultural and ethnic issues

Amudat is occupied by the Pokot tribe belonging to the Kalenjin cluster (Ethnic group), who are found in both Uganda and Kenya. They depend on Pastoralism as their main livelihood. The Pokot practice Female Genital Mutilation and early marriages. They speak Pokot and Swahili languages.

Table 2 Population distribution

District total population	101,079
Population Density/ sq.km	61.7 compared to 123.9 National
Number of households	17,510
Total Fertility Rate	7.2
Annual population growth rate	5.4% compared with 3.2 national

Table 3 Major tribes and languages spoken in Amudat District

Sub county	Tribe	Language
Karita	Pokot, Karamojong, Sebei, Bagishu, Babukusu,	Pokot, Ngakarimojong, Sebei, Lugishu, Lubukusu, Kiswahili
Amudat	Pokot, karamojong, Iteso, Sebei, Bagishu,	Pokot, Ngakarimojong,Ateso, Sebei, Lugishu, Kiswahili
Loroo	Pokot, karamojong, Iteso, Sebei, Bagishu, Basoga	Pokot, Ngakarimojong, Ateso, Sebei, Lugishu, Lusoga, Kiswahili
Amudat T/C	Pokot, Karamojong, Iteso, Sebei, Bagishu, Babukusu, Basoga	Pokot, Ngakarimojong, Ateso, Sebei, Lugishu, Kiswahili, Lusoga, Lubukusu

Livelihoods

The majority of the people access their livelihoods from livestock and agricultural produce (sorghum and maize). However because of the dry spells and luck of adequate water for livestock, the people led a semi nomadic lifestyle moving even to neighboring districts in search of main water and pasture.

Table 4 Amudat District main livelihoods, by sub-county and town council

Agro- Ecological Zone	Livelihood	Sub County
Agro pastoral	Apiary Farming Livestock rearing Sand quarrying Tourism Charcoal burning and fuel wood Livestock trade Lumbering	Karita
Pastoral	Livestock rearing Poultry Apiary Brick laying Stone and sand quarry Charcoal burning Livestock trade	Amudat, Loroo and town council

Women's livelihoods

Pokot women are considered inferior and are involved in the entire house hold work, farming, and apiary, charcoal burning, fetching wood fuel and stone quarrying for their livelihood. Men range with cattle for months in search for pasture and water. Most families are being taken care of by women since men move distances far away from home.

HAZARDS

Table 5 Hazard status

Hazard	Status	Sub County	Rank
Drought	Incidences across the entire district from August to March reported.	Karita Amudat Town Council Loroo Amudat	1
Environmental degradation	Incidences of Rampant tree cutting for charcoal mostly common	Karita Amudat Town Council Loroo Amudat	2
Land conflict	Incidences of institutional and individual land conflicts reported in the all district.	Karita Amudat Town Council Loroo Amudat	3
Floods	Incidences were reported	Karita Amudat Town Council Loroo Amudat	4
Vermin and problem animal	Incidences of monkeys, squirrels and part of the district is a game reserve were reported	Karita Amudat Town Council Loroo Amudat	5
Crop and animal disease	Incidences of CBPP, East coast fever, Foot and mouth disease were reported across the district	Karita Amudat Town Council Loroo Amudat	6
Human disease	Incidences of Brucellosis Kalazar, Typhoid, Jiggers, Cholera, AIDS were reported.	Karita Amudat Town Council Loroo Amudat	7
Strong wind	Incidences were reported	Karita Amudat Town Council Loroo Amudat	8
Pest infestation	Incidences of Caterpillars, Rats, tse tse flies were reported	Karita Loroo Amudat	9
Bushfires	Incidences were reported.	Karita Loroo Amudat	10
Hailstorms and lightning	Incidences of Strong Winds Accompanied with Lightening was reported	Karita Loroo Amudat	11
Cattle theft	Incidences reported	Karita	12

Hazard	Status	Sub County	Rank
Industrial accidents	Incidences of Accidents due to the open cast mining of gold were reported	Karita	13

Table 6 Summary of hazards by sub-county

Sub-county	Flood	Bushfire	Environmental degradation	Industrial accidents	Drought	Land conflict	Pest infestation	Crop, animal disease	Human disease	Cattle theft	Strong wind	Hailstorms and lightening	Vermin, problem animal	Total
Karita	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	**13**
Amudat TC	✓		✓		✓	✓		✓	✓		✓		✓	**8**
Loroo	✓	✓	✓		✓	✓	✓	✓	✓		✓	✓	✓	**11**
Amudat	✓	✓	✓		✓	✓	✓	✓	✓		✓	✓	✓	**11**
Totals	**4**	**3**	**4**	**1**	**4**	**4**	**3**	**4**	**4**	**1**	**4**	**3**	**4**	**43**

Table 6 shows which and how many hazards exist in each district.

Hazard Risk Assessment

Communities judged the severity and frequency of the hazards to assess the risk of each in the sub-counties. *Table 7* records their consensus in the subjective terms of low, medium and high. Not all hazards are evident in all sub-counties.

Table 7 Hazard risk assessment

Hazard	Karita	Amudat TC	Loroo	Amudat
Flood	H	L	H	H
Bushfire	M	N	H	M
Environmental degradation	H	M	H	H
Industrial accidents	L	N	N	N
Drought	H	H	H	H
Land conflict	H	H	M	M
Crop and animal disease	M	M	M	M
Pest infestation	M	N	M	M
Human disease	M	M	M	M
Cattle theft	L	N	N	N
Strong wind	M	M	M	M
Hail storm, lightning	M	N	M	M
Vermin, problem animals	H	L	M	M
Key: High = H, Medium = M, Low = L, Not reported = N				

RISKS

Drought Risk

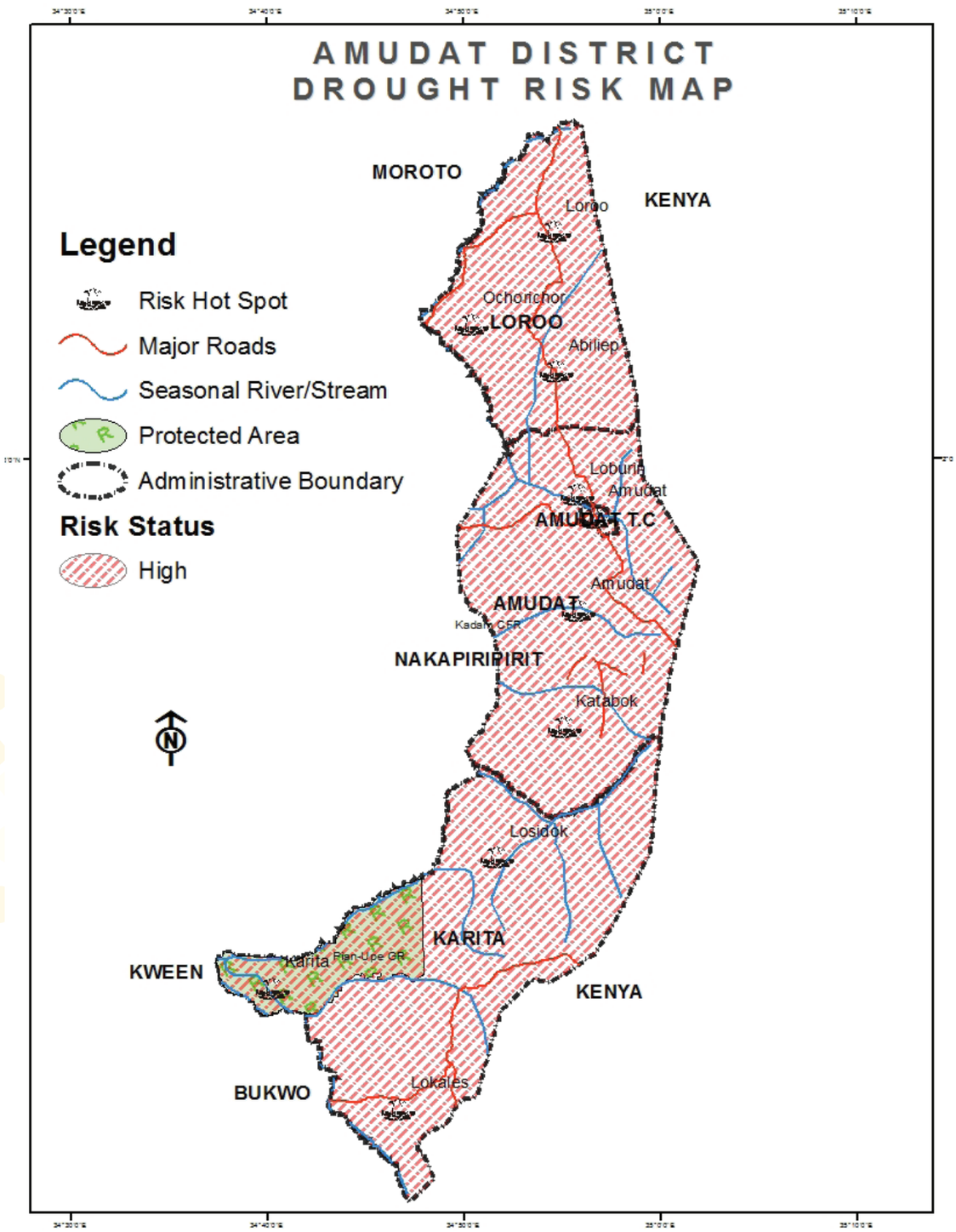

Figure 1 Drought risk

All sub-counties have eight months of prolonged dry spell, from August to March, associated with hunger and dependence on food aid. Risk levels are high across the district. Overall, the poor crop performance and harvest have been attributed to environmental degradation, erratic rains and prolonged dry spells experienced in the middle of the growing season.

Environmental Degradation Risk

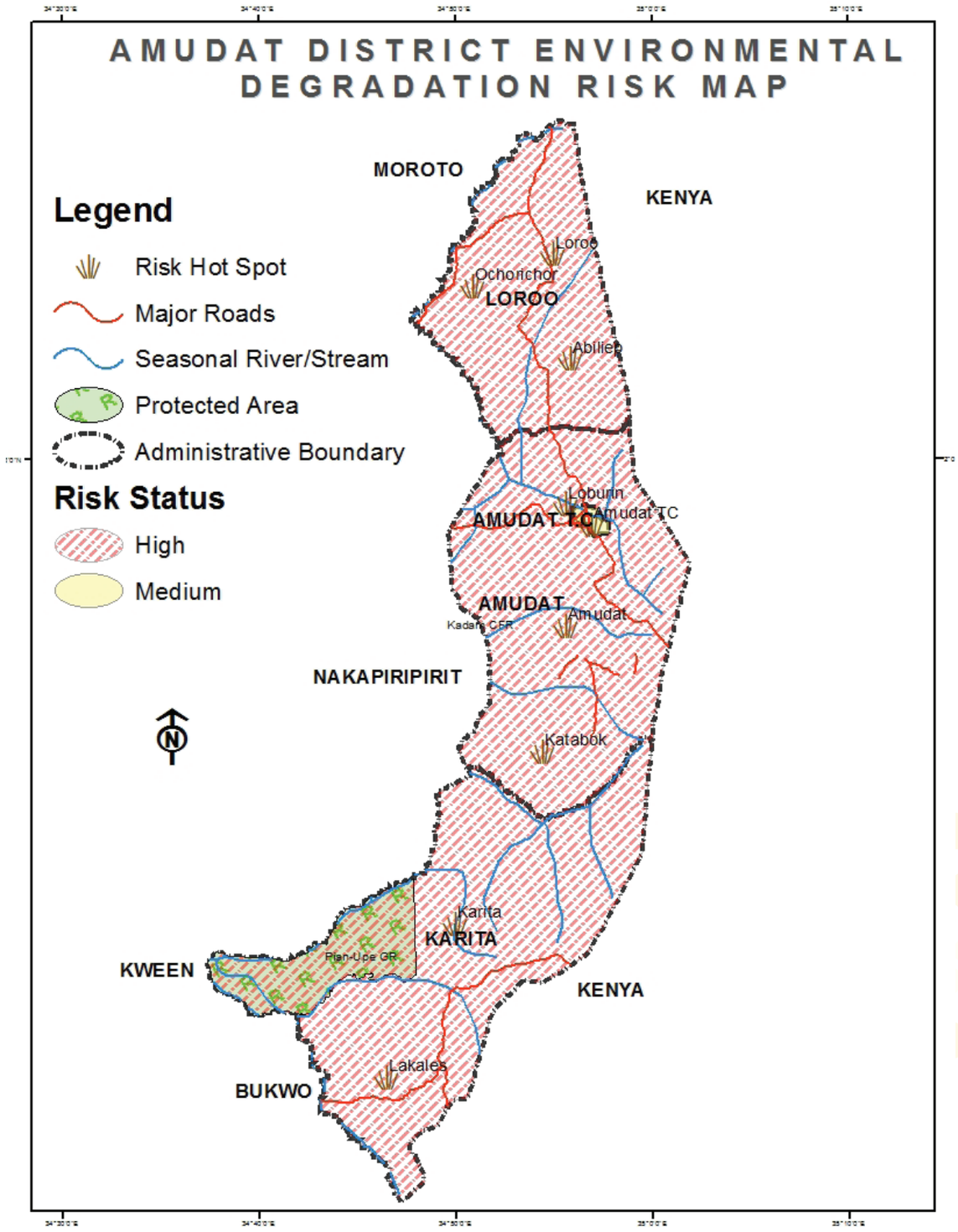

Figure 2 Environmental degradation risk

Rampant tree cutting for charcoal mostly in Karita Sub County with risk hot spots in Karita and Lokales Parishes. This is coupled with land clearing for cultivation mostly in Loroo and Amudat Sub County are the main issues. Other risk hot spots are bricklaying along Kanyangareng River in the town council, which leaves borrow pits and bare ground exposed to topsoil erosion by rain runoff and wind, causing floods along the Greek and Kanyangareng Rivers.

Land Conflicts Risk

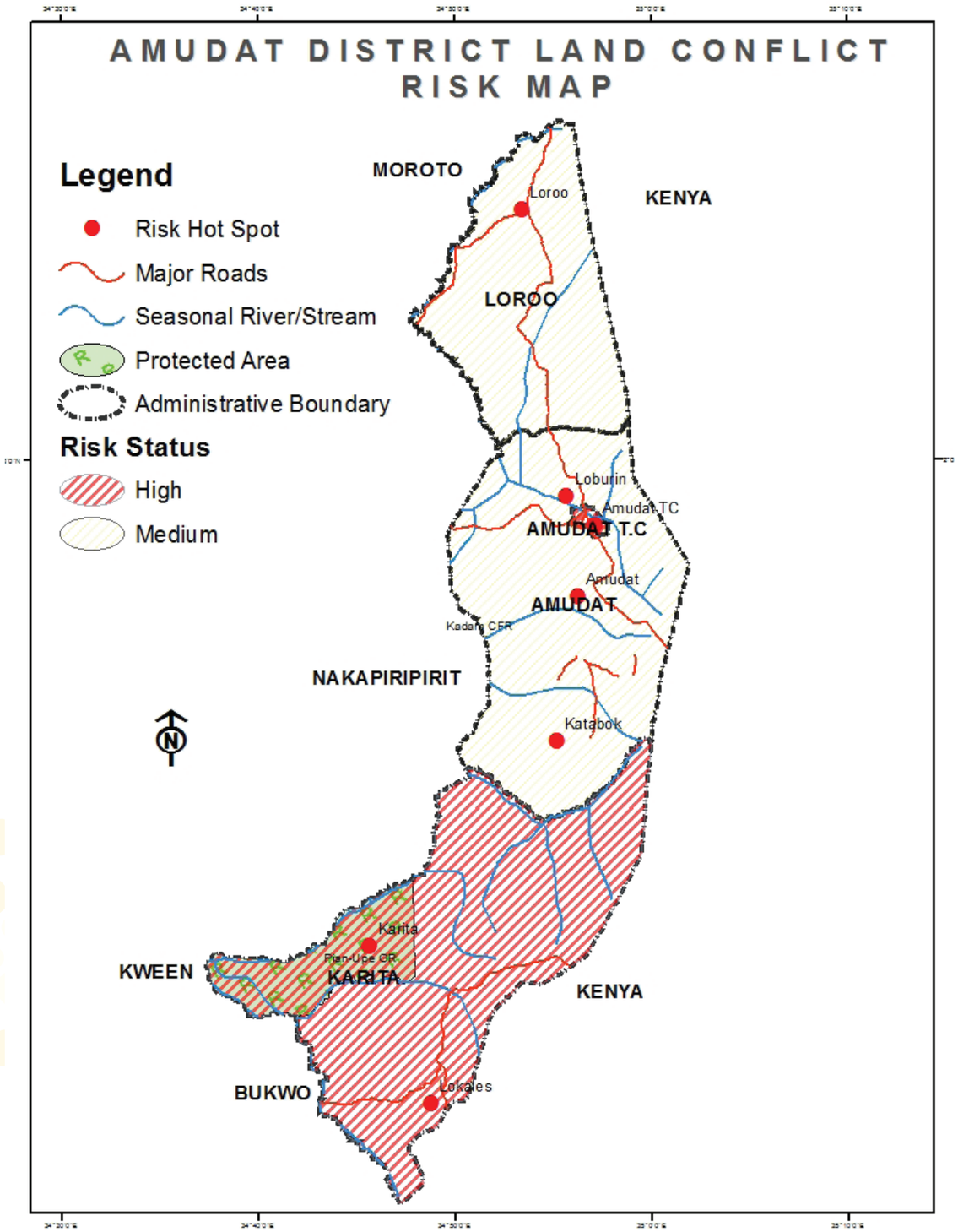

Figure 3 Land conflicts risk

Institutional and individual land conflicts are on the increase in all sub counties but more significantly in Karita Sub County. Returnees from Kenya claiming their land are reported. Boundary conflicts between Karita Sub County and Bukwo district. Uganda Wildlife Authority, and between the National Forest Authority and the local community of Karita Sub County centre on land ownership and land use, resulting from unclear boundaries. Transition of agriculture from pastoralism to agro-pastoralism is problematic and conflicted.

Flood Risk

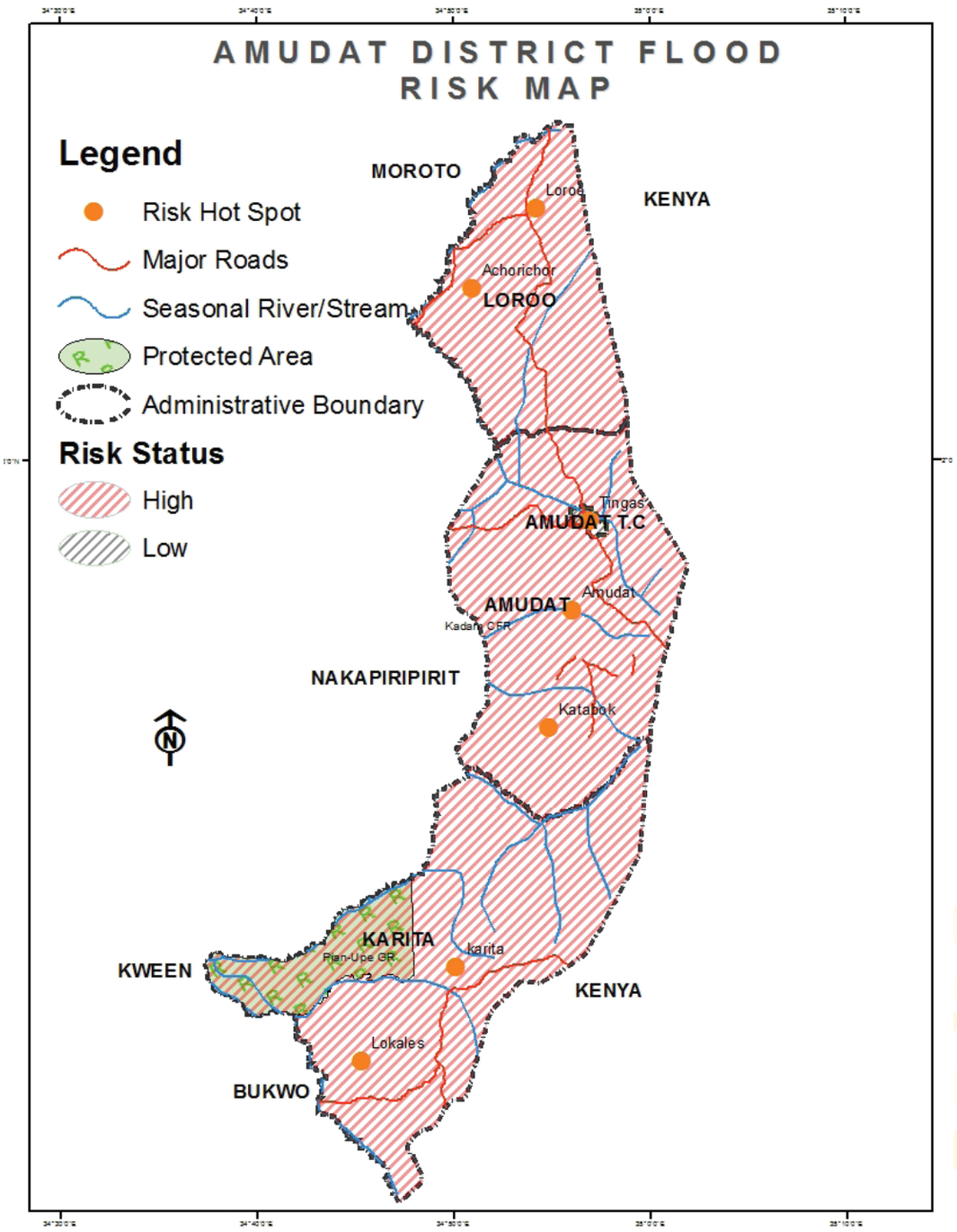

Figure 4 Flood risk

Flood risk is reported as high throughout the district, with hot spots in Lokales and Karita parishes (Karita Sub County), Katabok and Amudat parishes in Amudat Sub County, Tingas (Amudat TC) and Achorichor and Loroo parishes in Loroo Sub County. Heavy rains cause the Greek and Kanyangareng rivers to overflow their banks due to heavy discharge. Brick-making and gardening have eroded the river banks causing siltation and consequent flooding. Farming, cattle grazing, sand quarrying and fires during the dry season are destroying the wetlands, diminishing their capacity to absorb floodwater. Floods cause massive destruction of farmlands since most gardens are situated along the rivers and wetlands.

Vermin and Animal Problem Risk

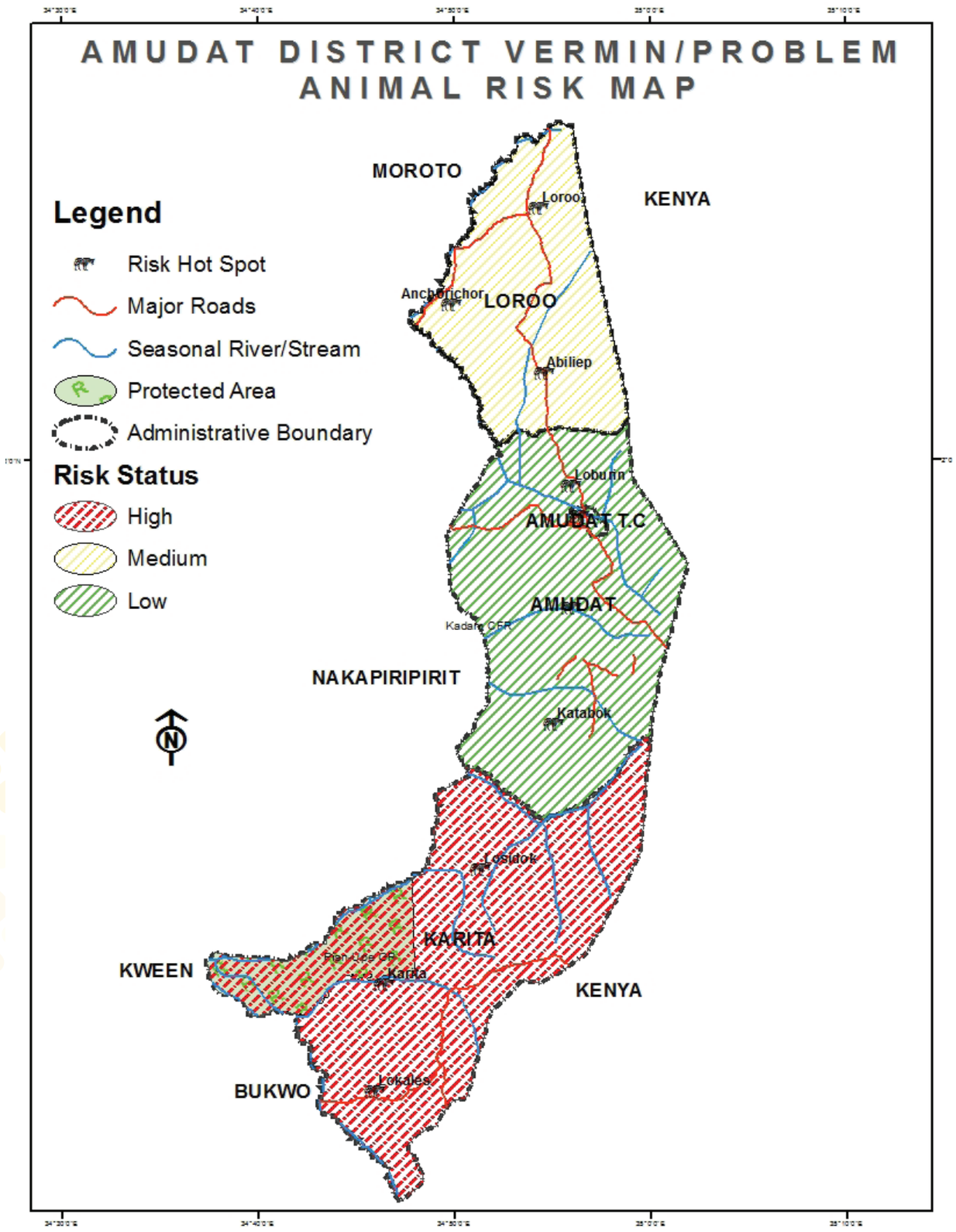

Figure 5 Vermin and animal problem risk

Vermin and problem animals are reported highest in Karita Sub County and lowest in Amudat Sub-County and Town Council. Risk hot spots are reported in Losidok, Karita and Lokales (Karita Sub County). The proximity of buffalos and warthogs in the Pian-Upe game reserve, and gardens located near river banks close to the habitats of monkeys and squirrels, expose the crops to destruction.

Crop and Animal Disease Risk

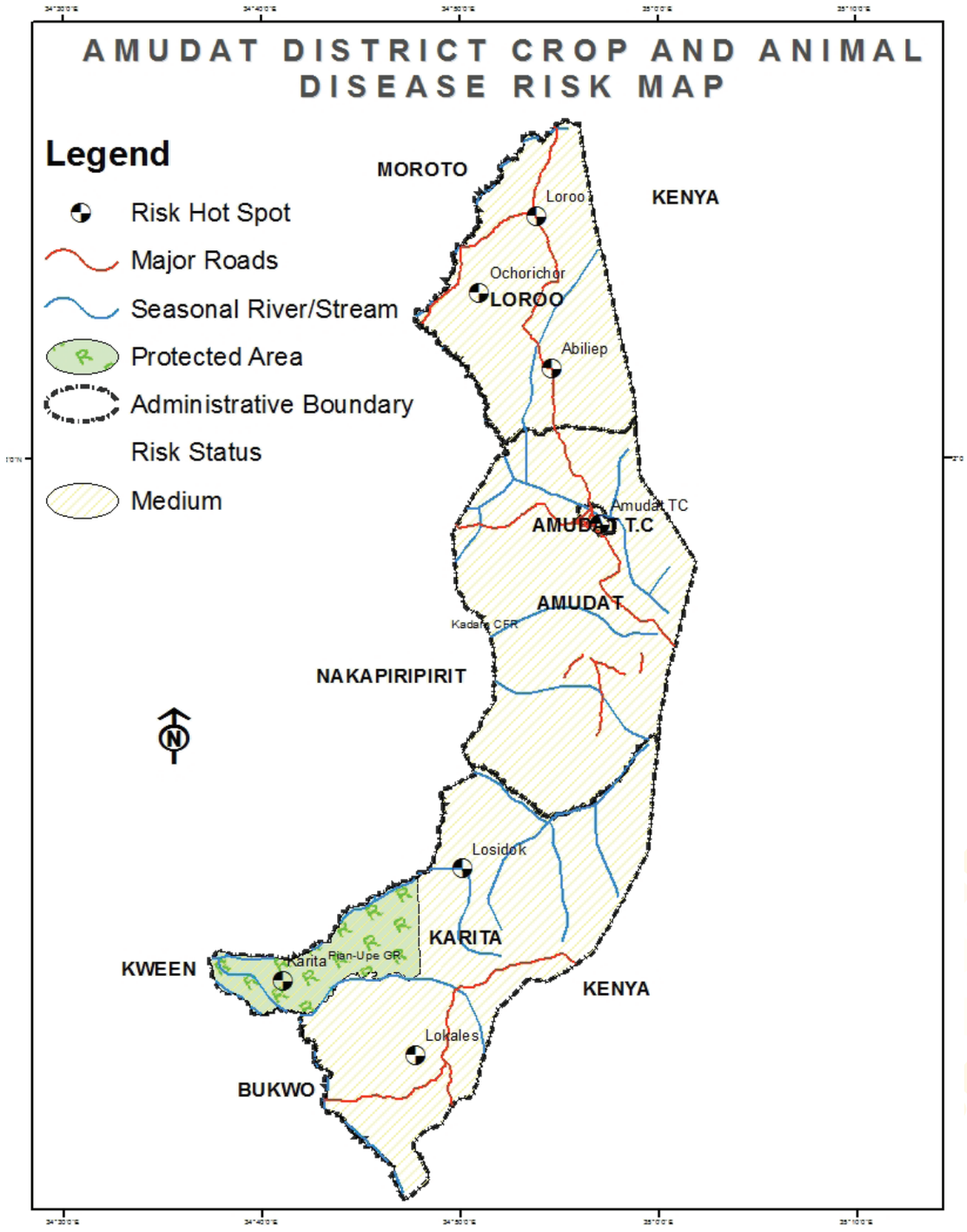

Figure 6 Crop and animal disease risk

Amudat District has the highest number of households (78%) owning cattle, and sheep and goats (75%), in the sub region. Due to the high livestock concentration in the district and brisk livestock trade with the Teso region; spread of cattle and animal diseases isincreasing. These include CBPP, east coast fever and foot and mouth disease, mainly caused by the presence of ticks and Tse Tse flies. Uncontrolled movement of animals from Kenya has increased the spread of cattle disease. As a result, risk hot spots are reported in Lokales and Losidok (Karita Sub County), Achorichor, Loroo and Abiliep (Loroo Sub county).

Human Disease Risk

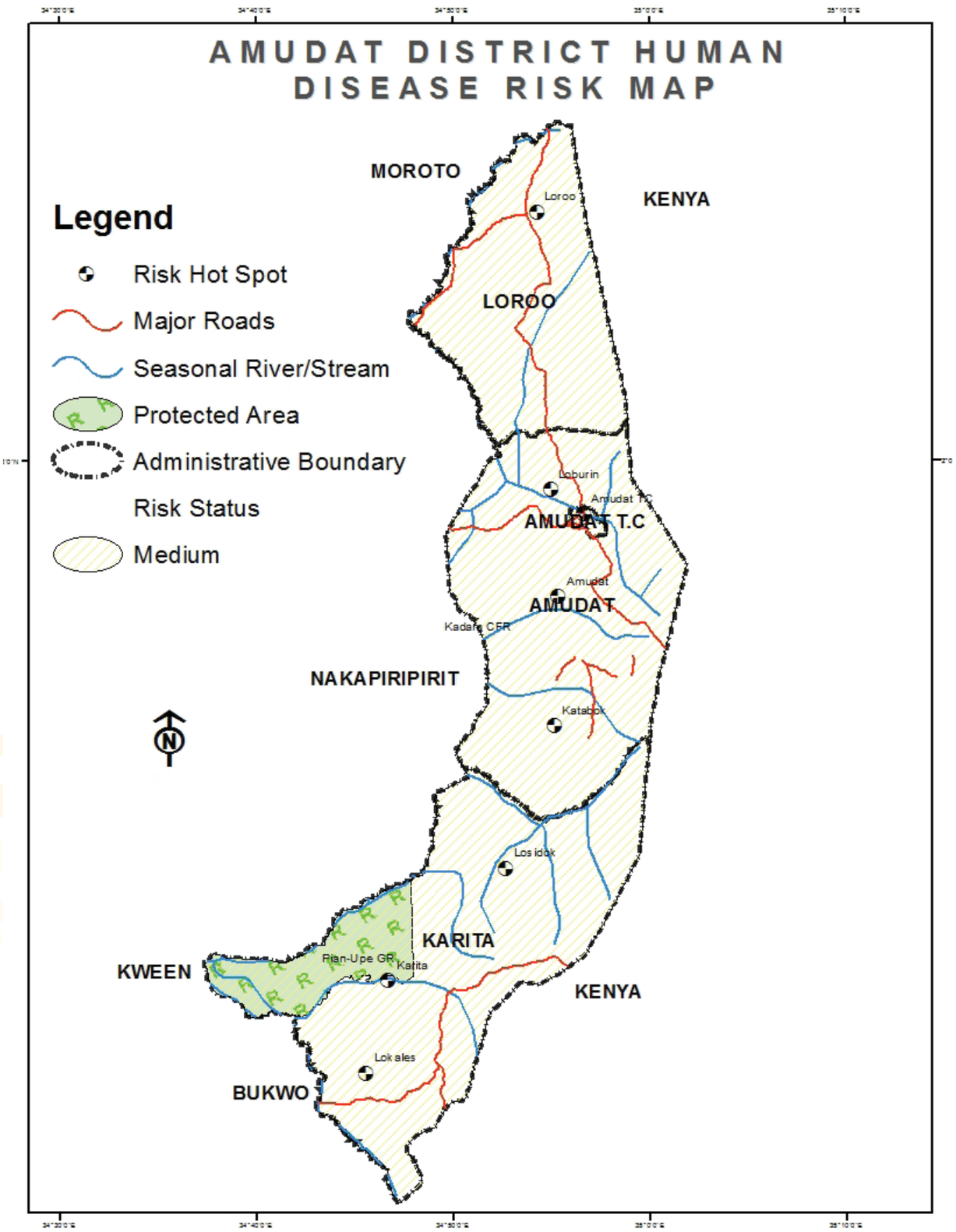

Figure 7 Human disease risk

Poor hygiene and sanitation with high level of animal pests and diseases has caused Brucellosis Kalazar, Typhoid, Jiggers, Cholera, HIV/ AIDS in Amudat District. District latrine coverage is 6% and the district has one Health Centre IV (Amudat Hospital) making control and treatment of most of these human diseases very difficult.

Strong Winds Risk

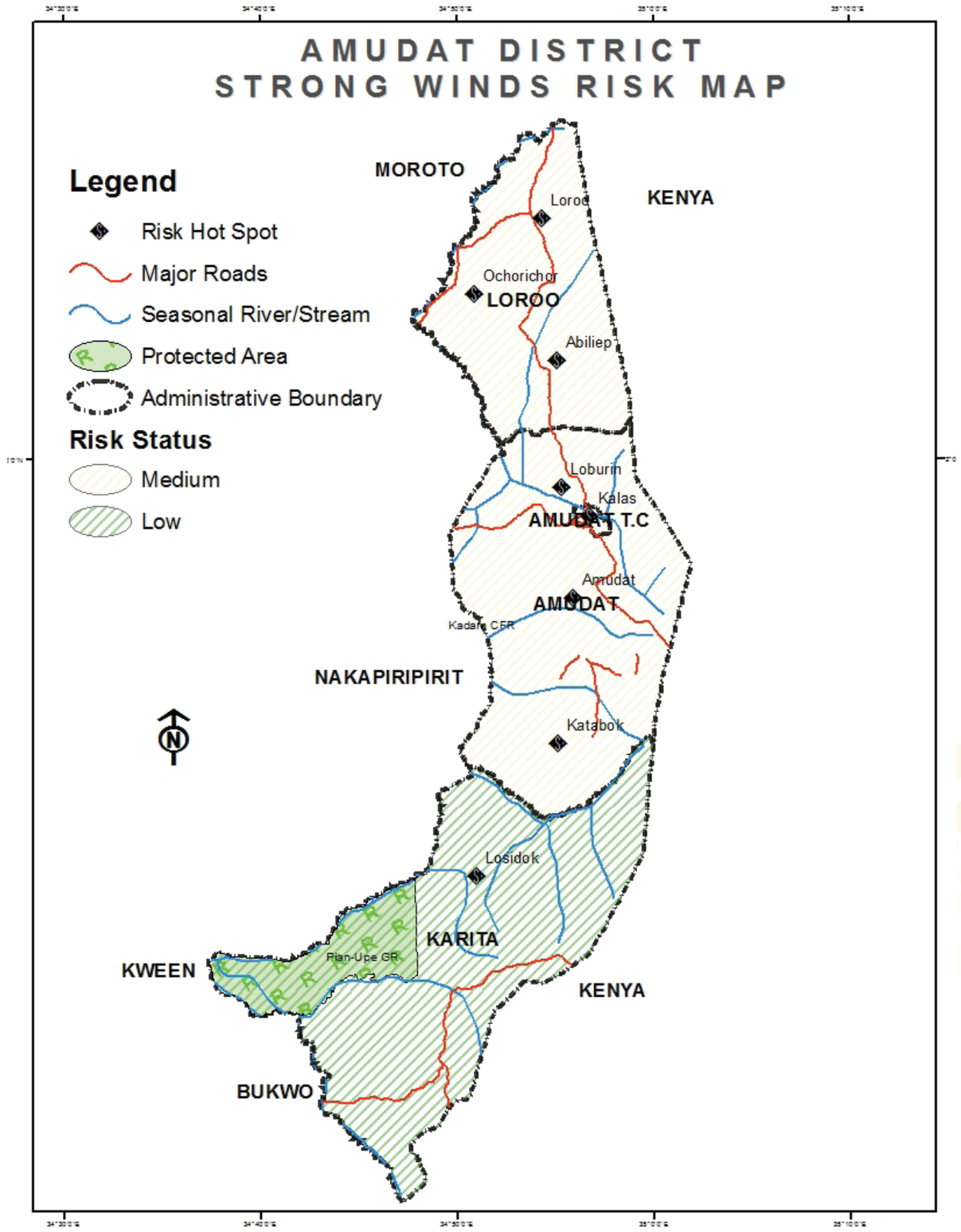

Figure 8 Strong winds risk

High environmental degradation has left the ground in many parts bare, with no vegetation cover to act as wind breaks so many roofs, mainly in the town council and Amudat Sub County, are lost to strong winds. Risk hot spots are reported in Losidok (Karita), Katabok, Amudat and loburin (Amudat Sub County) and Achorichor, Abiliep and Loroo parishes in Loroo Sub County.

Pest Infestation Risk

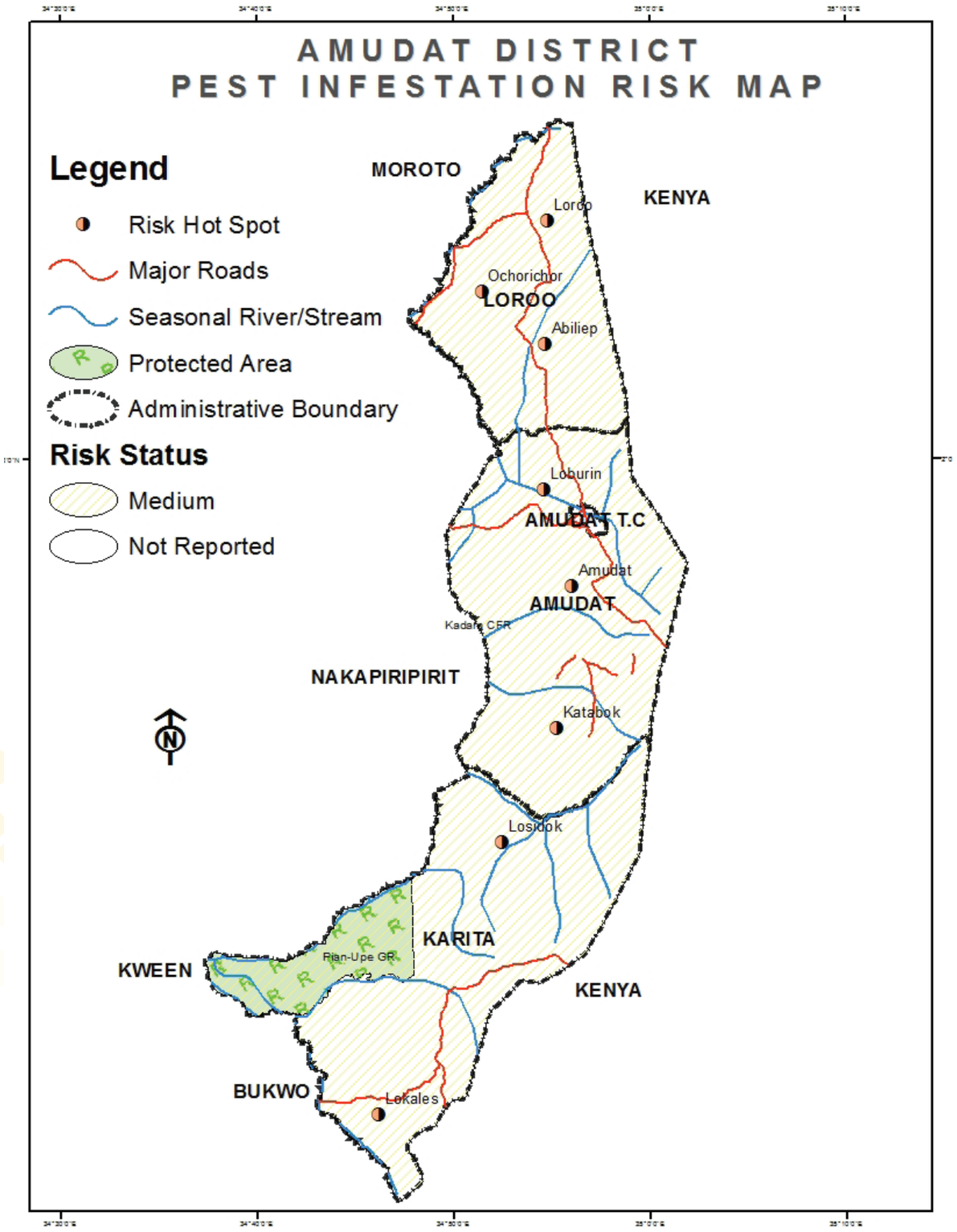

Figure 9 Pest infestation risk

Caterpillars, rats, ticks, tse tse flies destroy gardens and spread diseases to animals and humans. Instances are recorded in Karita Sub County (Losidok and Lokales parishes) and Amudat Town Council. Others risk hot spots are reported in Katabok and Loburin in Amudat Sub County, and also in loroo, Achorichor and Abiliep parishes in Loroo sub county.

Bushfire Risk

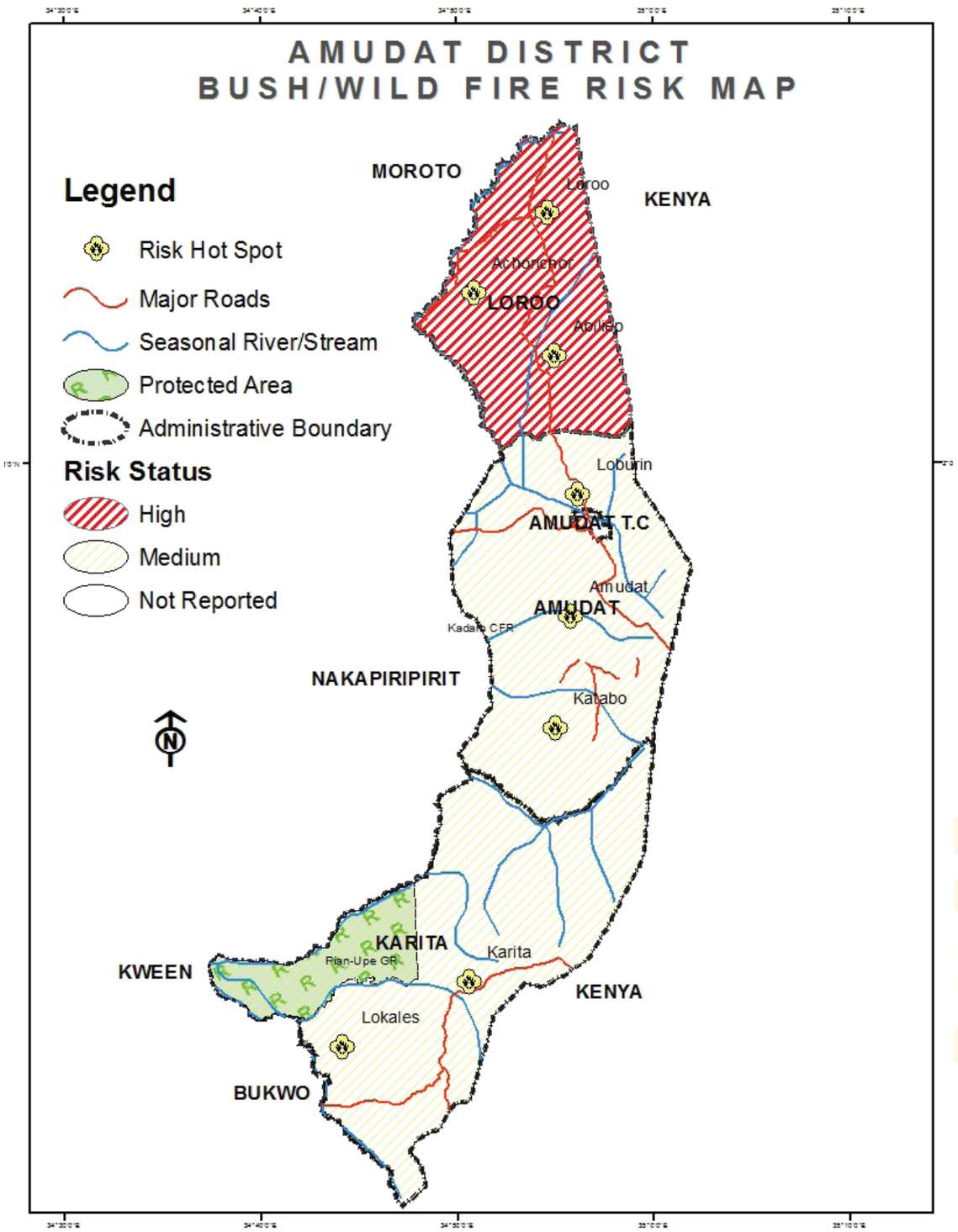

Figure 10 Bushfire risk

Bush and wild fires are reported highest in Abiliep, Achorichor and Loroo Parishes (Loroo Sub County, attributed to pastoralists' practice of burning grassland to control ticks and prepare rangelands for germination of fresh grass when the rains begin. The uncontrolled fires have destroyed granaries and food stores which are left in the garden. Fire is also deleterious to the soil organisms in the rangeland ecosystem. Other risk hot spots captures are; Lokales and Karita (Karita Sub county), Katabok, Amudat and Loburin (Amudat sub county).

Hailstorms and Lightning Risk

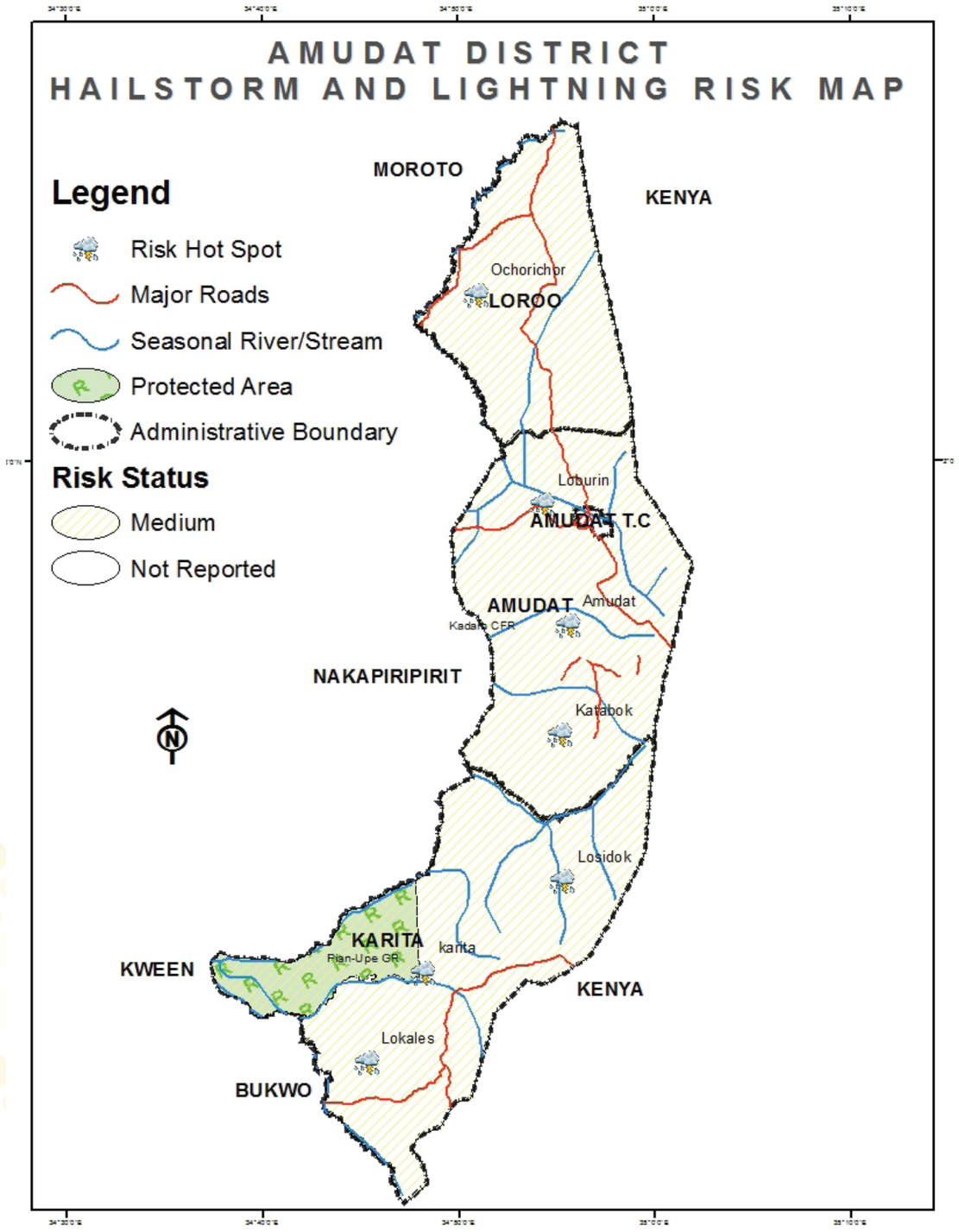

Figure 11 Hailstorm and Lightning Risk

Hailstorms result from thunderhead cloud formation in the wet season and cause livestock deaths, crop destruction and property destruction. Risk hot spots are recorded in, Katabok parish, Amudat Sub County. Lightning at Katabok Primary school in 2014 killed several pupils. Other risk hot spots are recorded in Karita Sub County (Lokales, Losidok and Karita) and Achorichor parish in Loroo Sub County.

Cattle Theft Risk

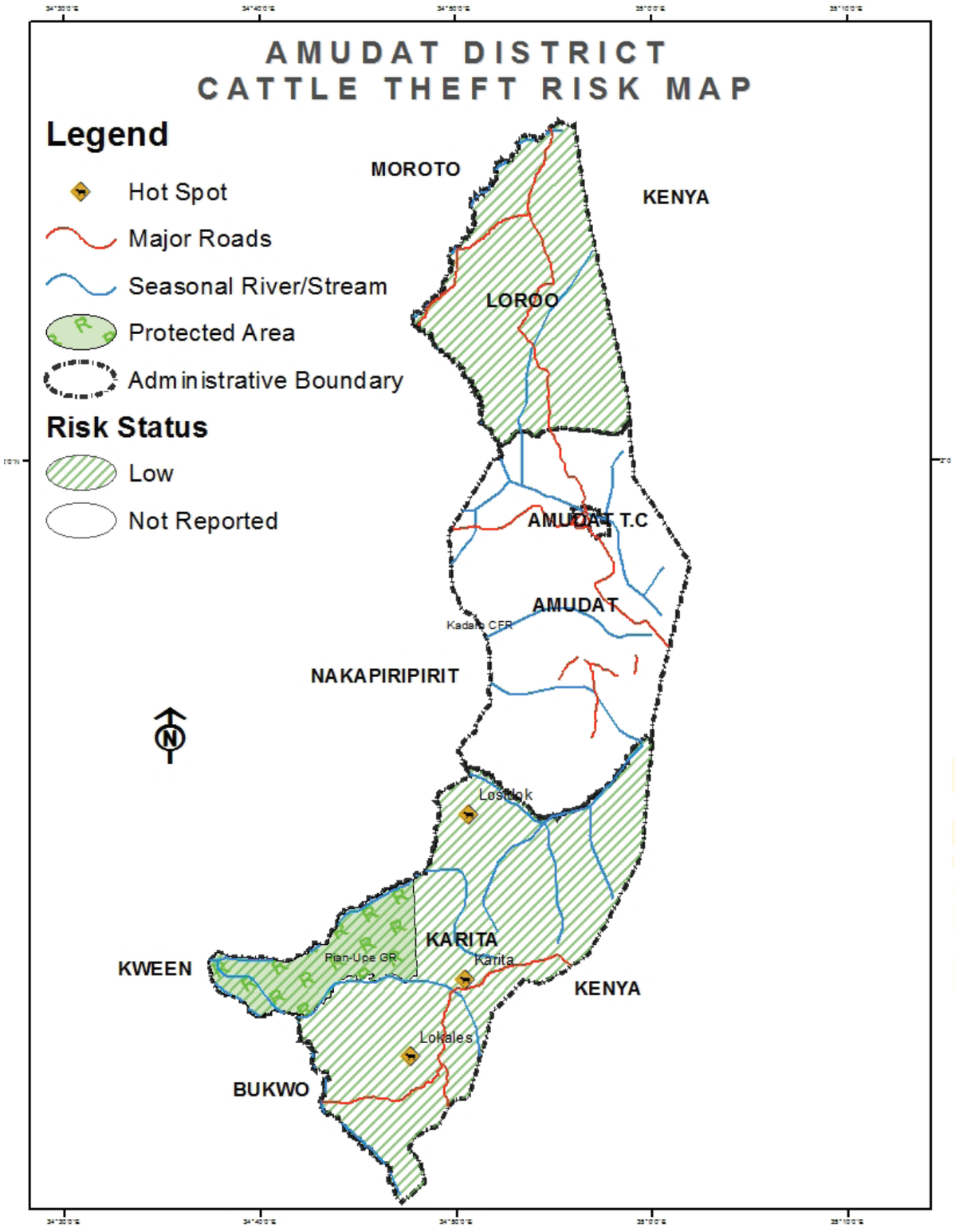

Figure 12 Cattle theft risk

Low cattle theft is still recorded in the district, mainly in Karita and Loroo Sub counties. The animal stolen from Amudat are trucked to neighboring districts including Kotido and Kaabong. Other thefts occur as Pokot cattle migrate towards Nakapiripirit during the dry season in search of pasture and water. Risk hot spots are also reported in Lokales, Karita and Losidok in Karita Sub-County.

Industrial Accident Risk

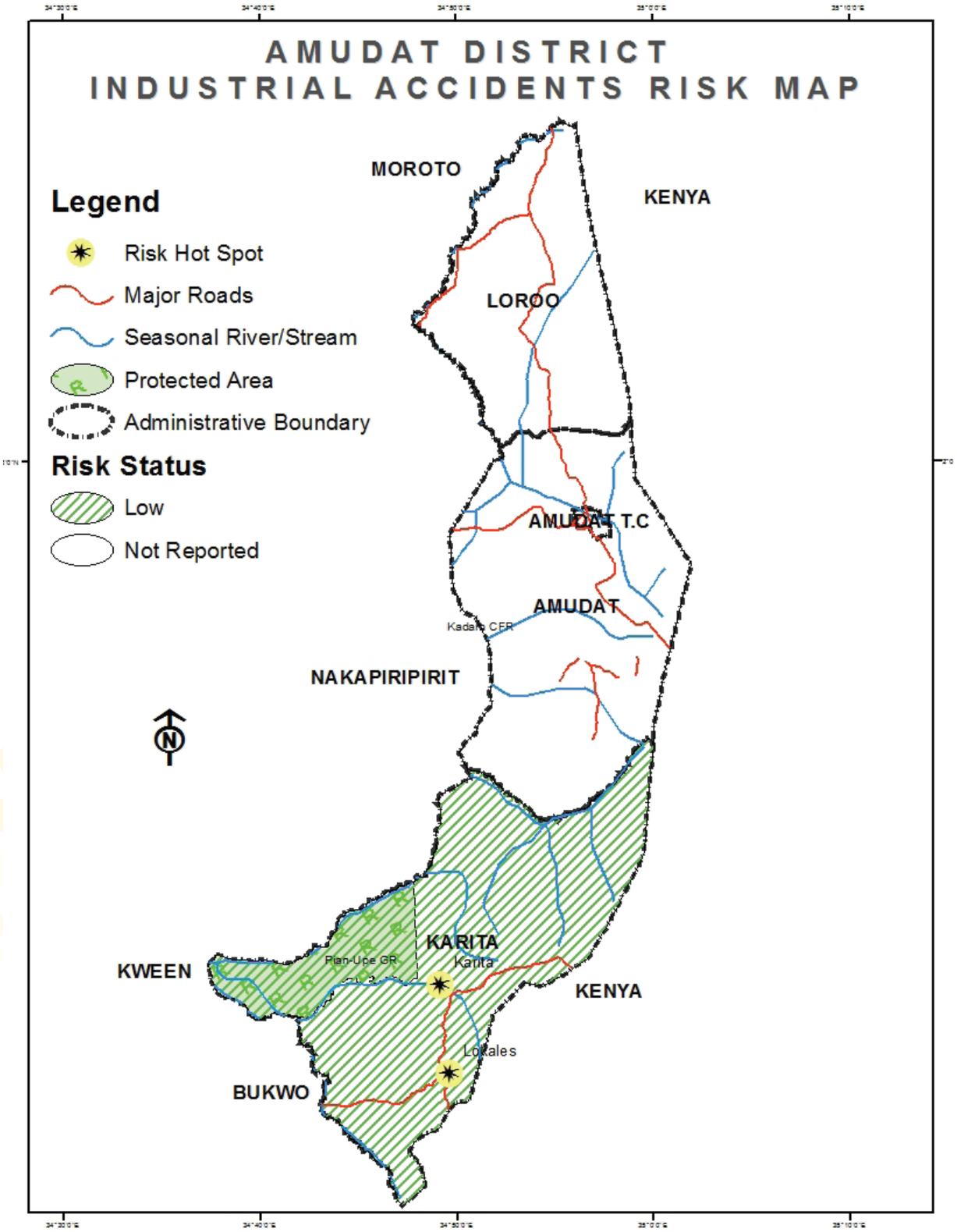

Figure 13 Industrial accident risk

A few cases of accidents during the open pit gold mining operations in the district are reported mainly in Karita Sub county, Chepkararat village. Other hot spots are in Karita and Lokakes.

VULNERABILITY

Risk and Vulnerability Assessment

Table 7 summarizes the communities' assessment of hazard severity and frequency in the sub-counties. Table 8 transforms those qualitative low/med/high judgements to numerical values which, when summed horizontally and sorted in descending order, rank the hazards by risk. The vertical sums indicate the relative vulnerability of the sub-counties.

Table 8 Risk and Vulnerability Assessment

Hazard	Karita	Amudat TC	Loroo	Amudat	Totals
Drought	3	3	3	3	12
Environmental degradation	3	2	3	3	11
Flood	3	1	3	3	10
Land conflict	3	3	2	2	10
Crop and animal disease	2	2	2	2	8
Human disease	2	2	2	2	8
Strong wind	2	2	2	2	8
Vermin and problem animals	3	1	2	2	8
ushfire	2		3	2	7
pest infestation	2		2	2	6
Hail and lightening	2		2	2	6
Industrial accidents	1				1
Cattle theft	1				1
Total	29	16	26	25	
Score: High = 3, Medium = 2, Low = 1, Not reported = blank					

Risk Vulnerability Map

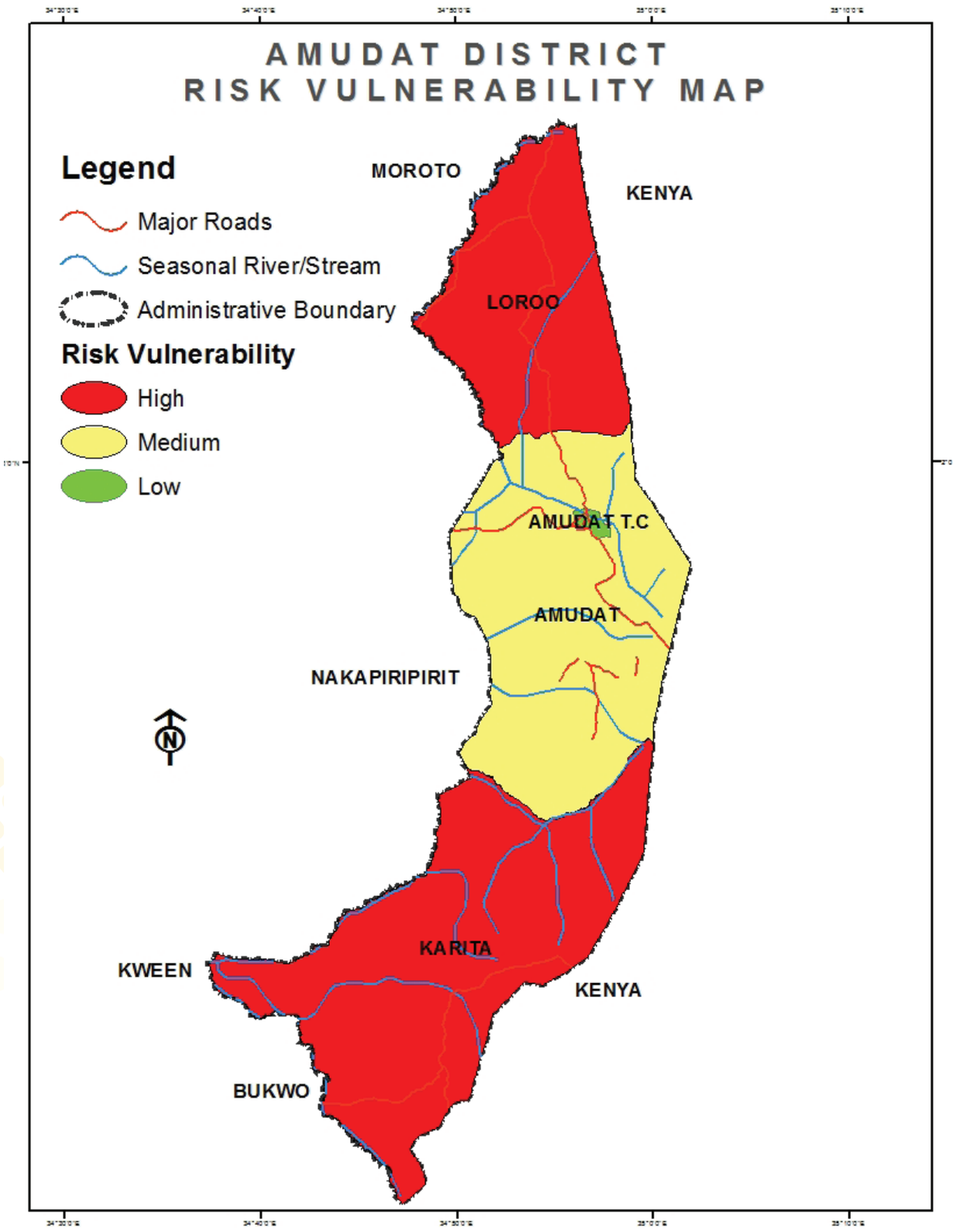

Figure 14 Risk Vulnerability Map

Figure 14 colour-codes the Amudat sub-counties according to ranges in the risk values in *Table 8.* Karita and Loroo are relatively more vulnerable (high) than Amudat Sub-County and Town Council. Significant hazards that crosscut the district are drought and food security, environmental degradation and floods. These stand out as high in Karita and Loroo. Amudat Town Council ranks high in land conflicts possibly due to increased land values and demand for urban land.

CONCLUSIONS

The multi-hazard vulnerability profile produced in this mapping exercise combines physical data and perceptual information captured with participatory methods in Amudat District. It provides an understanding of how the district perceives each hazard based on likelihood of occurrence and its impact on the local communities.

The findings identify 13 hazards, drought , environmental degradation, flood , land conflict, crop and animal disease, human disease, strong wind, vermin and problem animals, bushfire, pest infestation, hail and lightening, industrial accidents and cattle theft as predominate in the district, in order of decreasing risk.

Drought, environmental degradation, flood and land conflict ranked closely as the most dangerous and high-risk hazards for people in Amudat District.

All of the sub-counties have significant vulnerability to disaster, accumulating risk from these hazards. Karita, Loroo and Amudat Sub-Counties record high aggregate vulnerability levels. The least vulnerable, Amudat Town Council, has high risk of drought and land conflict. This aggregated vulnerability to several hazards at once compounds the exposure to disaster risk and the complexity of managing it.

The mapping exercise demonstrates the value of integrating spatial information with community perception of hazards in the understanding of disasters in Amudat District. This disaster risk knowledge should therefore inform the disaster mitigation plans developed by the Amudat district local government that direct actions to minimize the impacts of hazards.

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 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, 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/destroy 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. It sometimes involves use of fire arms and thus resulting into loss of lives.

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. They 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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