

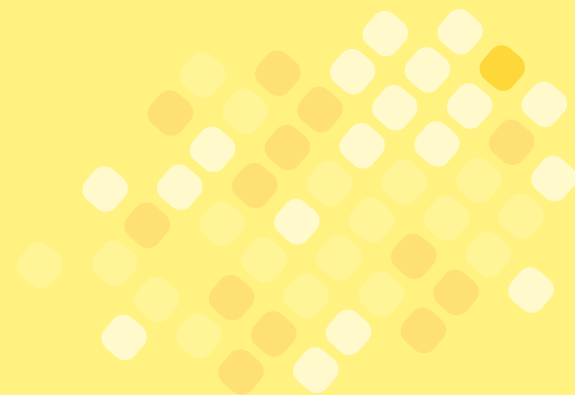


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KARAMOJA ABIM District

HAZARD, RISK AND VULNERABILITY PROFILE

August 2014





With support from:

United Nations Development Programme

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Acronyms

CESVI	an Italian international NGO
CIS	Community Information System
DDMC	District Disaster Management Committee
DRM	Disaster Risk Management
GIS	Geographic Information System
GOU	Government of Uganda
GPS	Global Positioning System
NGO	Non-Governmental Organization
NUSAF	Northern Uganda Social Action Fund
OPM	The Office of the Prime Minister
SC	Sub-County
TC	Town Council
UNDP	United Nations Development Programme



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. Pamela 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 Abim 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, gender demographics by Sub-County and livelihoods.

Abim District lies in latitudes 2°30' - 4°15'N and longitudes 33°30' and 35°00'E and is part of the Karamoja sub-region. It is bordered by Kotido District to the north and east, Napak District to the southeast and south, Otuke District to the southwest and Agago District to the west.

The findings identify drought, floods, crop and animal disease, land conflicts, bushfires, pests infestations, environmental degradation, strong wind, vermin and problem animals, landslides, cattle theft, hailstorms and lightning, mining accidents and human disease as the predominate hazards in the district, in order of decreasing risk.

Drought, floods, crop and animal disease, and land conflicts ranked closely as the most dangerous and high-risk hazards for people in Abim District.

All of the sub-counties have significant vulnerability to disaster, accumulating risk from several hazards. Alerek, Nyakwae and Morulem record the highest aggregate vulnerability levels compared to the other sub-counties in the district. Even the least vulnerable, Abim Town Council, has high risk of floods, drought and landslides. 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

Abim 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, vermins/problem animals, human diseases, pest/parasite infestation, land/rock slides, cattle theft, bush/wild fires, hailstorms/ lightning and strong winds.

The Abim 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 Abim 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.

OBJECTIVE

The objective of the hazard, risk, and vulnerability mapping is to produce a district profile that will aid planning and decision making processes with analysis of disaster risks in Abim 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 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/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

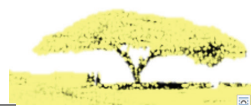
Stakeholder Mapping and Local Meetings. A preliminary field meeting was held in each district to capture key local issues related to disaster incidence and trends. The meetings gave opportunities for the mapping team and stakeholders to identify other key resource persons and support staff from within 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.

OVERVIEW OF THE DISTRICT

Location

Abim District extends between latitudes 2°30' - 4°15'N and longitudes 33°30' and 35°00' E. The district covers an area of 2,337 km². The district is part of the Karamoja sub-region and is bordered by Kotido District to the north and east, Napak District to the southeast and south, Otuke District to the southwest and Agago District to the west. The district headquarters are located approximately 140 km by road through Napak or 192 km via Kotido, northwest of Moroto, the largest town in the sub-region.

Brief District History

Abim District became functional on 1 July 2006. Previously it was known as Labwor County in Kotido District. The district is composed of the five sub-counties of Abim, Alerek, Lotuke, Morulem, Nyakwae and one town council, Abim Town Council.

Topography

Abim District geomorphology extends from a part of Karamoja region and comprises principally the pre-Cambrian system, the Mesozoic and Cenozoic groups and is mainly later pre-Cambrian. The other groups of rocks include the Mesozoic eras, associated with volcanic eruptions of Rwoth Mountain in Alerek, Angiro in Abim Sub-County, and others.

The altitude ranges between 1000m to 1800m above sea level with the highest points being at Akur in Abim Sub-County, which forms part of the plateau comprising a number of levels that represent several stages of transition of the ancient basement rock. The Labwor hills with their interlocking spurs and valleys offer magnificent vistas, with the drainage flowing to the west.

Climate

Abim District has a wet and dry woodland savannah climate characterized by an intensively hot dry season lasting from December to February with strong winds and a rainy season from March to November, with a dry spell in June and/or July. Rainfall is about 1350mm per annum, fairly evenly distributed, except in the eastern belt which has lower rainfall. The daily temperatures range from 20°C to 35°C and relative humidity can reach 60% during the rainy season.



December - February is a time of high winds, dust storms, desiccation and vegetation cover reduction, normally diminishing in March at the beginning of the wet season.

Vegetation

Table 1 Abim District forest reserves by types

Reserve	County	Type of forest	Total area
Angolebwal	Labwor	Woody, montane and riverine	20,210
Kanu	Labwor	Woody, montane and riverine	8,293
Alerek	Labwor	Woody, montane and riverine	7,433
Akur	Labwor	Woody, montane and riverine	6,434
Ating	Labwor	Woody, montane and riverine	1,318
Napono	Labwor	Woody, montane and riverine	1,709
Otukei	Labwor	Woody, montane and riverine	46,221
Total			91.618

The most environmentally damaged areas in recent times are Loyoroit, Otumpili, Koya, Orwamuge and Atunga Parishes. The main causes of degradation include:

- clearing of land for agriculture
- wood fuel collection
- uncontrolled bush burning
- charcoal burning
- over-grazing

Soils

Abim has three major types of soils, namely ferralitic, vertiso and ferruginous tropical soils, with lesser types including lithosols. The genesis of soils in Abim District has been affected by many factors which include climate, elevation, type of parent rock, vegetation cover, topography, human land use and erosional processes. The dominant ferruginous soils have been affected by weathering processes and have become less productive.

Ferralitic soils in more advanced stages also occur in small patches in the whole district. Their productivity depends on favorable rainfall, adequate depth and maintenance of humic top soils. Litho-sols which are very stony and contain solid rocks are found in the eastern part of the District. All the soils of Abim are of low to medium productivity with mono-cropping currently being practiced. Much of the land has lost fertility because torrential rains and strong winds have carried away much of the top soil.

Land Use

Of the total 2,337 km² land area, 429.78 km² is under gazetted Central Forest Reserves, 12.718 km² is covered by bare rock and barren land and 36.025 km² is under subsistence agriculture. Woodlands outside forest reserves, grassland and range lands total 1858.477 km².

The district is divided into two agro-ecological zones, the semi-arid east of Nyakwae Alerek and part of Morulem Sub-County, and the wet Agro-ecological zone of Lotuke and Abim Sub-County. Predominant crops grown in the semi-arid agro-ecological zone are sorghum, maize, finger millet, pease, pumpkins, groundnuts and cucumber, while the wetter agro-ecological zone grow mainly millet, beans, cassava, sweat potatoes, ground nuts, sunflower, sesame, upland rice and cotton.



In spite of abundant resources in term of soils, forest, wild animals, wetlands, livestock, water, human resource, minerals, sun and wind, this bounty has not been adequately utilized and developed due to a number of constraints. Earlier surveys in the district showed the rich potential of silver, copper, iron, mica and other minerals.

Land Resources

Most of the land eco-systems are fragile, depending as they do on the unreliable availability of rain. Much of the land is communally owned and it is suffering the tragedy of the commons in the form of over-grazing, over-harvesting and other unsustainable exploitations of ecosystem services. District land issues include:

- Land use planning is weak with virtually land use planning or regulation
- The land title registry systems are inadequate
- Public land is not delineated
- Many unresolved land disputes

Forest Resources

There are six natural forests and four plantation forests in the district. Small semi-evergreen and deciduous forests are mainly confined to some low-lying riparian environments and inselbergs. All forest reserves in the district suffer from encroachment to some degree. Public attitudes towards conservation are relatively positive but more advocacy for afforestation programmes is needed.

Population and Demographics

Table 2 Projected 2012 population of Abim District by Sub-County

Sub-County	Households		2011 Population			
	CIS May 2011	Census 2002	Male	Female	Total	Projections 2011
ABIM	3,075	3,222	6,984	7,728	14,712	16,000
ABIM TC	1,226	-	3,652	3,788	7,440	-
ALEREK	2,185	1,633	6,743	7,405	14,148	8,000
LOTUKE	4,215	2,827	13,094	13,634	26,728	13,800
MORULEM	2,795	2,019	8,744	8,018	16,762	10,000
NYAKWAE	2,073	1,661	5,613	5,975	11,588	8,100
TOTAL	15,569	11,362	44,830	46,548	91,378	55,900

Source: CIS summary results 2011

Table 3 Percentage distribution of the population by age group at Sub-County level

Sub-County	Total Population	(%) Distribution of the Population		
		0 - 5 Years	6 - 17 Years	Above 18 Years
ABIM	14,712	22.1	36.3	41.6
ABIM TC	7,440	18.8	37.2	44.0
ALEREK	14,148	19.2	38.2	42.5
LOTUKE	26,728	20.7	37.6	41.7
MORULEM	16,762	24.0	36.8	39.2
NYAKWAE	11,588	19.9	38.6	41.5
TOTAL	91,378	21.0	37.4	41.6

Source: CIS summary results 2011

Major Tribes and Languages Spoken in Abim District

The ethnic group here is mainly the Ethur speaking people. There are a few Iteso and Lango speaking people; belonging to Nilo-Hamites. The Ethur are predominantly agriculturalists with isolated livestock husbandry though with the improved security due to the ongoing disarmament the level of livestock rearing has gone up.

Table 4 Major tribes and languages spoken in Abim District.

Sub-County	Tribe	Language
NYAKWAE	Ethur	Leb Thur/luo
	Karamojong	Ngakarimjong
	Iteso	Ateso
MORULEN SUB-COUNTY	Ethur	Leb Thur /lu0
	Iteso	Ateso
LOTUKE SUB-COUNTY	Ethur	Leb Thur/luo
	Iteso	Ateso
	Lango	Luo
ALEREK	Ethur	Leb Thur/luo
	Ngijie	Ngajie
ABIM SUB-COUNTY	Ethur	Leb Thur/luo
ABIM TOWN COUNCIL	Ethur	Leb Thur/luo

Livelihoods

Table 5 Abim District main livelihoods, by sub-county

Agro-ecological zone	Sub-County	Livelihood
SEMI-ARID EASTERN	Nyakwae	<ul style="list-style-type: none"> • Subsistence Farming • Livestock Rearing • Charcoal Burning • Fuel Wood Sale • Local Brewing
	Alerek	<ul style="list-style-type: none"> • Subsistence Farming • Livestock Rearing • Charcoal Burning • Mining • Petty Trade • Fuel Wood Sale • Local Brewing



Agro-ecological zone	Sub-County	Livelihood
WET AGRO-ECOLOGICAL ZONE	Morulen	<ul style="list-style-type: none"> • Subsistence Farming • Livestock Rearing • Brick Laying • Charcoal Burning • Mining • Petty Trade • Manual Labour • Local Brewing
	Lotuke	<ul style="list-style-type: none"> • Subsistence Farming • Livestock Rearing • Brick Laying • Charcoal Burning • Mining-Sand • Petty Trade • Manual Labour • Local Brewing

Women's Livelihoods

The main livelihood activity of women in Abim is subsistence agriculture. However, some women participate in other livelihood activities such as charcoal burning, sale of fuel wood and petty trade. A visit to markets in Abim shows more women than men vending food stuff and second-hand clothing, and offering tailoring services.

Table 6 Percentage distribution of the population by economic activity

Distribution of the Population (%)						
Sub-County	Population Above 5yrs	Agriculture	Trade	Manufacturing	Services	Other
ABIM	11,390	44.5	3.5	0.0	7.1	48.3
ABIM TC	6,042	24.3	1.5	0.1	7.6	64.6
ALEREK	11,423	0.3	0.0	4.7	55.4	18.5
LOTUKE	21,036	54.5	0.6	0.0	2.8	30.0
MORULEM	11,754	53.2	1.6	0.1	5.5	24.2
NYAKWAE	9,248	62.4	0.8	-	2.1	34.0
TOTAL	70,893	42.4	1.2	0.8	12.7	33.6

Source: CIS summary results may 2011

HAZARDS

Figure 1 Hazard Status

Hazard	Status	Sub-County	Rank
Drought	Instances are common especially between November and march	all sub-counties	1
Crop And Animal Disease	Tick-borne diseases are endemic but with sporadic increase during wet season (November to March). Crop pest is a major cause of losses both pre and post-harvest	all sub-counties	2
Land Conflict	Instances reported	Abim Lotuke Morulem Nyakwae	3
Flood	Instances reported	Nyakwae Morulem Alerek and Lotuke are most affected	4
Environmental Degradation	Instances of bush burning, invasive species, charcoal burning reported	Alerek Morulem Abim SC	5
Bush Fire	Instances of fires reported. Mainly due to pasture regeneration, charcoal burning and hunting	all sub-counties except for the Town Council	6
Vermin/Problem Animal	Instances of cane rats, monkeys, baboons, buffalos and squirrels were reported	Nyakwae, morulem and Alerek	7
Human Disease	Instances of a strange disease was reported	all Sub-counties	8
Pests/Parasites Infestation	Instances of termites, caterpillars, bugs, stock borers were reported.	Morulem	9
Landslides	Instances of rock slides were reported	Morulem	10
Cattle Theft	Instances reported	Nyakwae Alerek	11
Severe Storm	Instances of heavy storms and lightening were reported	Alerek Abim SC Abim TC	12



Industrial Accident	Instances of gold mining accidents were reported.	Morulem Alerek	13
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Table 8 Summary of hazards by Sub-County

Sub-County	Flood	Crop And Animal Disease	Drought	Lightning, Hailstorm	Strong Winds	Bush Fire	Pests, Parasite Infestation	Cattle Theft	Environmental Degradation	Human Disease	Landslide	Land Conflict	Mining Accident	Vermin	Total
ABIM	✓	✓	✓	✓	✓	✓	✓	✓	✓		✓	✓		✓	11
ABIM TC	✓	✓	✓	✓	✓	✓	✓	✓	✓			✓			7
ALEREK	✓	✓	✓	✓	✓	✓	✓	✓	✓			✓	✓	✓	12
LOTUKE	✓	✓	✓		✓	✓	✓	✓	✓			✓	✓	✓	11
MORULEM	✓	✓	✓		✓	✓			✓	✓	✓	✓	✓	✓	11
NYAKWAE	✓	✓	✓	✓	✓	✓	✓	✓	✓			✓		✓	11
TOTALS	6	6	6	4	6	5	4	4	6	1	2	6	2	5	62



Table 8 Hazard risk assessment

Hazard Category	Abim	Abim TC	Alerek	Lotuke	Morulem	Nyakwae
Floods	H	H	M	H	H	H
Crop and Animal disease	H	H	H	H	H	H
Drought	H	H	H	H	H	H
Hailstorms and Lightning	L	L	L	N	N	M
Strong Winds	L	L	H	M	H	M
Bush/Wild fires	L	N	H	L	L	H
Pests/Parasite infestations	L	L	M	M	M	M
Cattle theft	L	N	M	L	N	M
Environmental Degradation	M	L	H	L	M	M
Human Disease	N	N	N	N	M	N
Land/Rock Slides	L	H	L	L	M	L
Land conflicts	H	L	H	H	H	H
Rudimentary Mining Accidents	N	N	H	N	H	N
Vermin/Problem Animal	L	N	H	L	M	M
Key: High = H, Medium = M, Low = L, Not reported = N						



RISKS

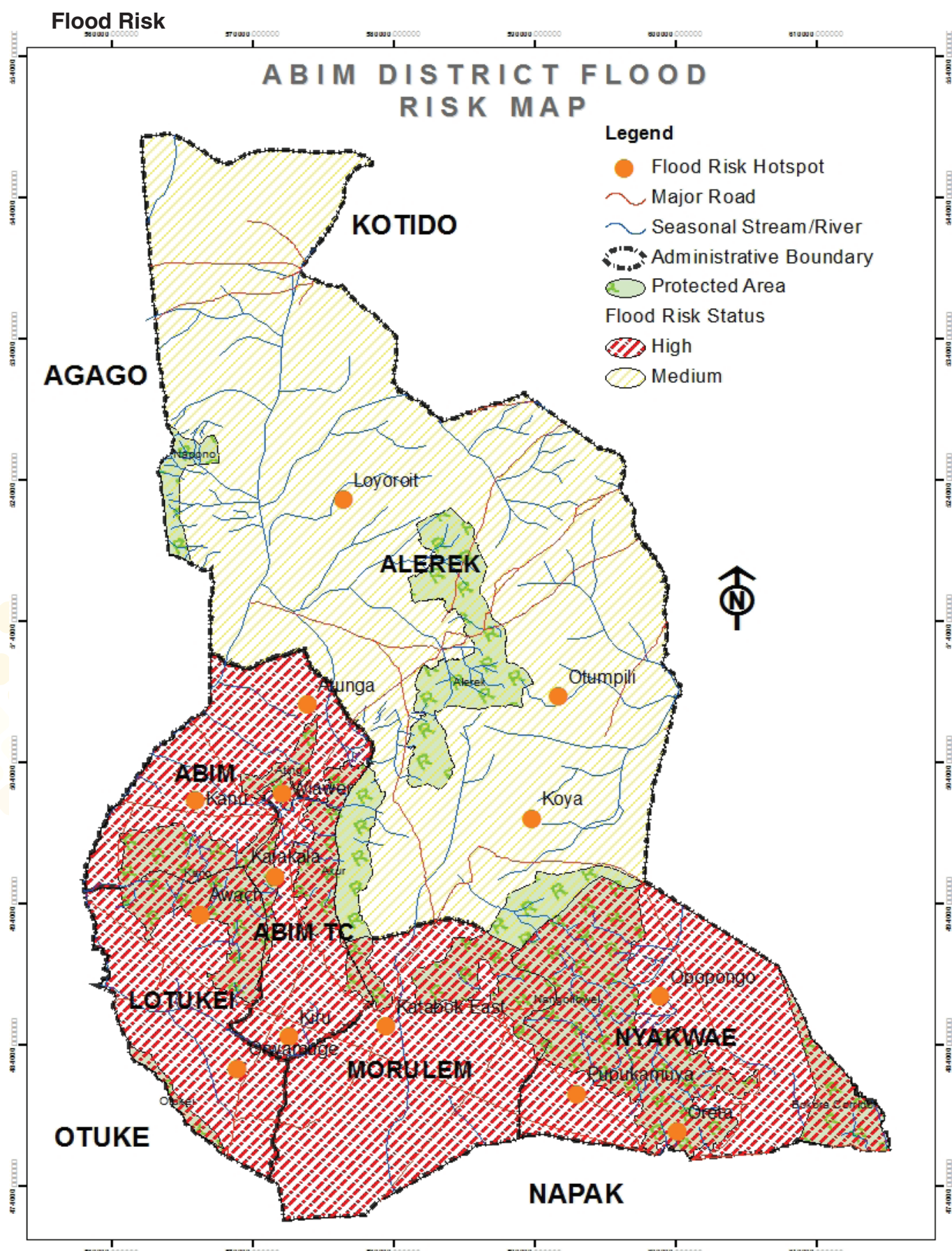


Figure 2 Flood risk

In recent times floods have become almost annual events during the wet season, affecting farmers especially those in the valleys and near wetlands areas. For example, Aminata, Kanu, Katabok East, Atunga, Awach parishes especially in the villages of Oorapool, Kulawach and Gotapawau are hot spots. The floods are related to the silting of the streams as a result of deforestation of slopes in the watershed. The impacts of floods are felt especially when roads are submerged and bridges washed away, a very risky situation since people rely on external sources of food and other goods. The main causes for floods are heavy rains for two to three days during August-October each year and environmental degradation as a result of deforestation and poor farming methods.

Field observations revealed that the lower section of Alerek-Molerum road near the Kawomeri Valley dam floods and eroded gullies develop along the upper section. Trucks distributing relief items meant for Koya have often ended at the Sub-County headquarters, stopped by the poor condition of the road. The Alerek-Kathimongor road and Kanu primary school become inundated at flood time. The Loyoroit Bridge is sometimes washed away cutting off Kotido-Abim, Lira and Soroti. Three hot spots on the road to Nyakwae at Aryonomunyen, Akuo and Angolebwal are usually submerged after heavy rains.



Bushfires

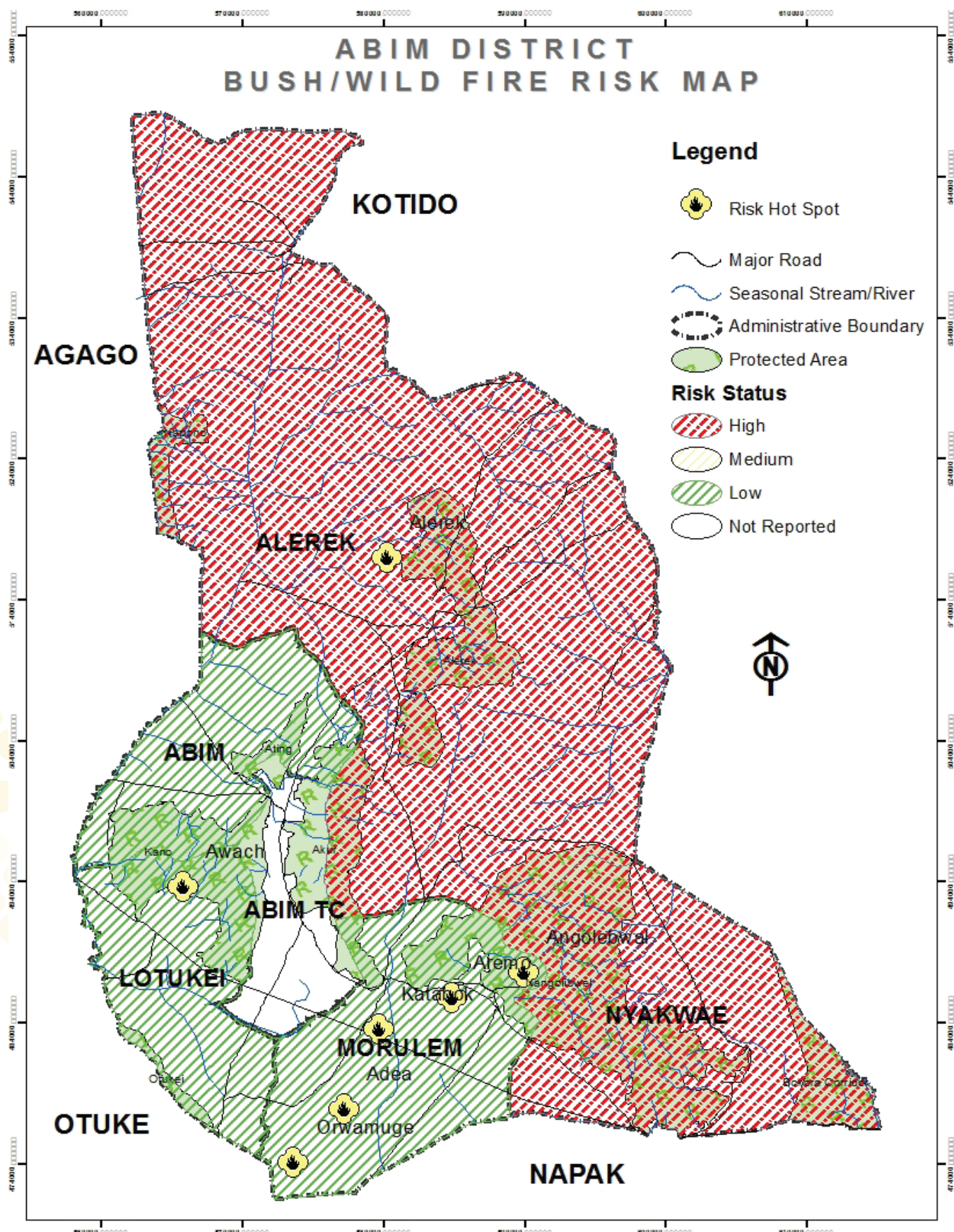


Figure 3 Bushfire risk

The risk of bush fires is relatively high owing to the bush burning culture of the pastoralist from Kotido and Napak and the indigenous traditional hunters from Abim. The practice is common between October and December of every year. Bush fires have been a major threat to crops and properties mostly in the prolonged dry seasons. Bush fire risk hot spots are reported in Gatapau parish in Aridi and Awach villages. Hot spot are also recorded in Orwamuge, Aremo, Adea, Ktabok and Alerek. People of Nyakwae have often lost their crop in the fires and nearly all Pine plantations which were done under NUSAF and private plantations have been burnt down. In 2012, the new resettlements in koya were burnt leading to loss of property and life.



Environmental Degradation

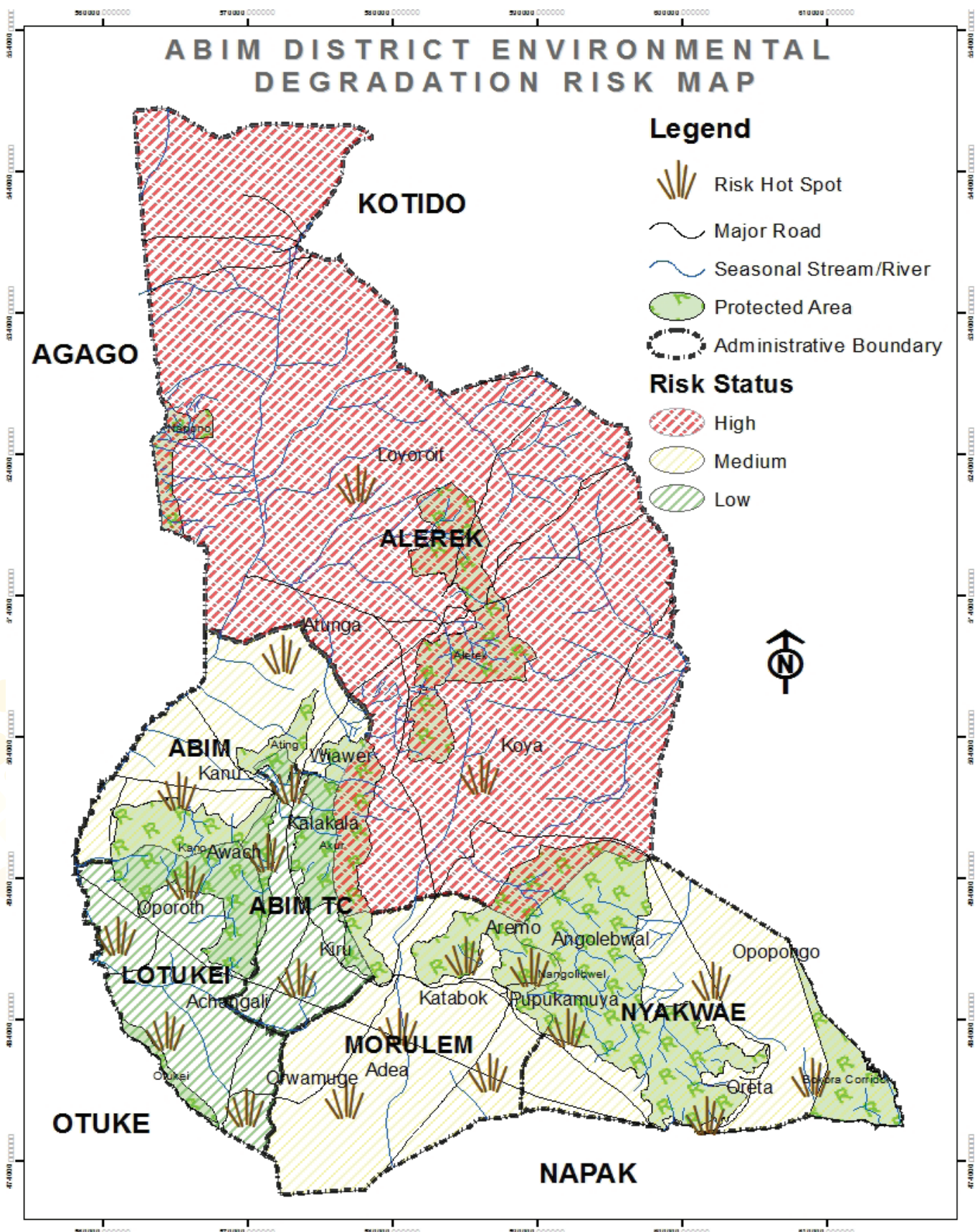


Figure 4 Environmental degradation risk

The environment in Abim District, particularly in Alerek Sub-County, suffers from a variety of damaging human activities especially charcoal burning. Tree cutting without replacement for the purpose of

acquiring fuel for brick burning and at commercial scales has led to significant deforestation. Ineffective management and lack of monitoring of forest reserves, clearing land for agriculture, uncontrolled bush fires and insecurity that has forced people to take refuge in forest reserves are serious forestry issues. Burning is a traditional vegetation clearance practice which recently, since the 1990s, has been the cause of an increasing incidence of uncontrolled bush fires. During 2012-14 hot spots of high risk for bush fires have been recorded in Alerek Sub-County.

Poor agricultural practices that have caused soil exhaustion include monoculture or inadequate crop rotation, and tillage that encourages erosion.

Other causes of environmental degradation are invasive species such as *Lantana camara* and *Striga*; immigration of charcoal burners from Kotido, Soroti and Mbale; immigration of large scale farmers from Teso region; and illegal logging. The charcoal camps at Okililingi in Alerek Sub-County shown on the map are a hot spot, with social impacts including “charcoal for sex” incidents and school dropout because parents employ their children in charcoal sales. Deforestation along Alerek-Morulem road has increased soil erosion leading to flooding and creation of gullies.



Industrial Accidents

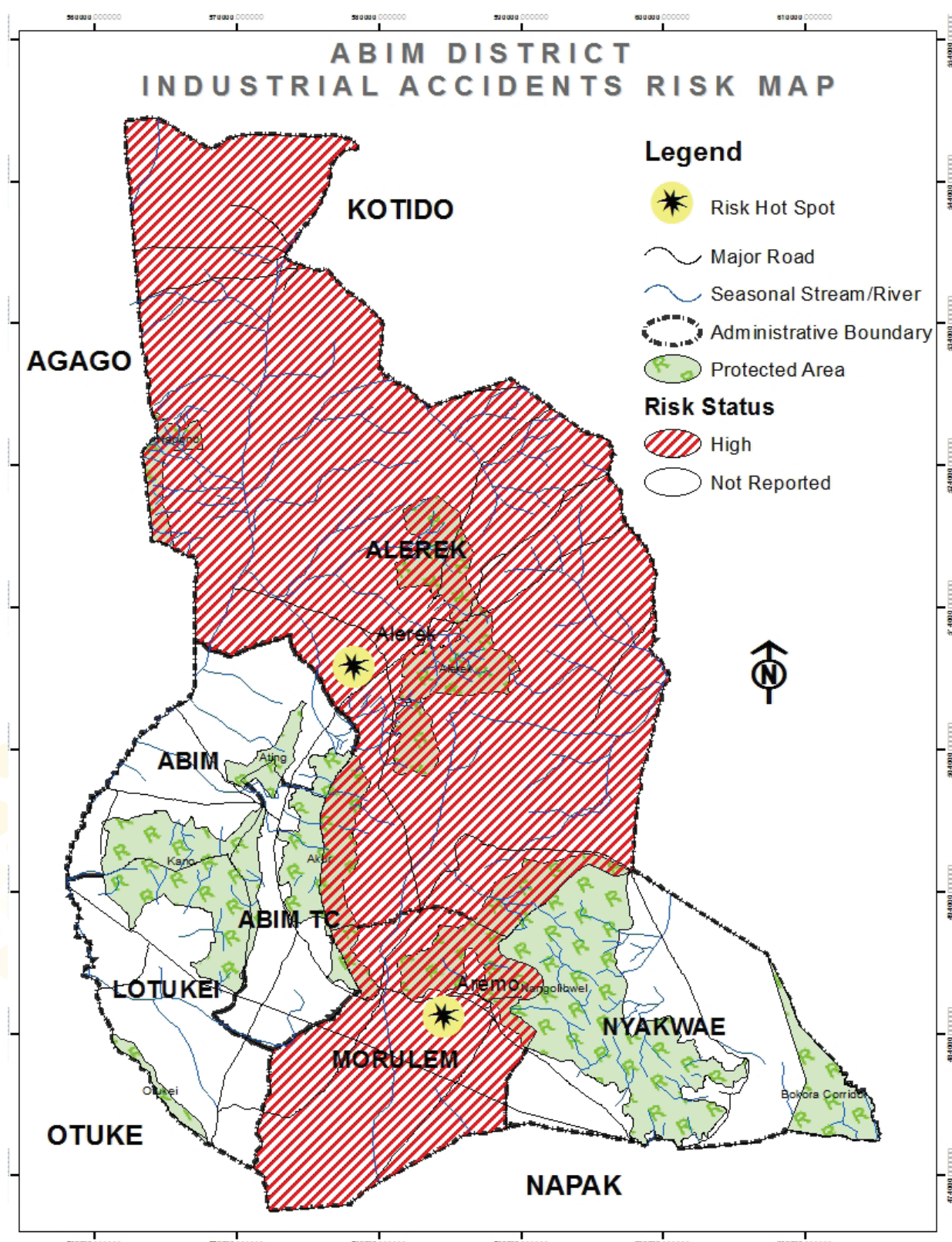


Figure 5 Industrial accident risk

Collapses of hillsides and excavations in the mining areas in Aremo Paris in Morulem Sub-County and Angorom in Alerak Sub-County are reported to have buried a number of people since gold mining activity started in these places. A visit to the mining sites showed cracks on the surface of the soils, posing a great risk for human safety. The local artisan miners do not have protective gear or the support of regulatory authority to improve their safety in mining activities.

Drought

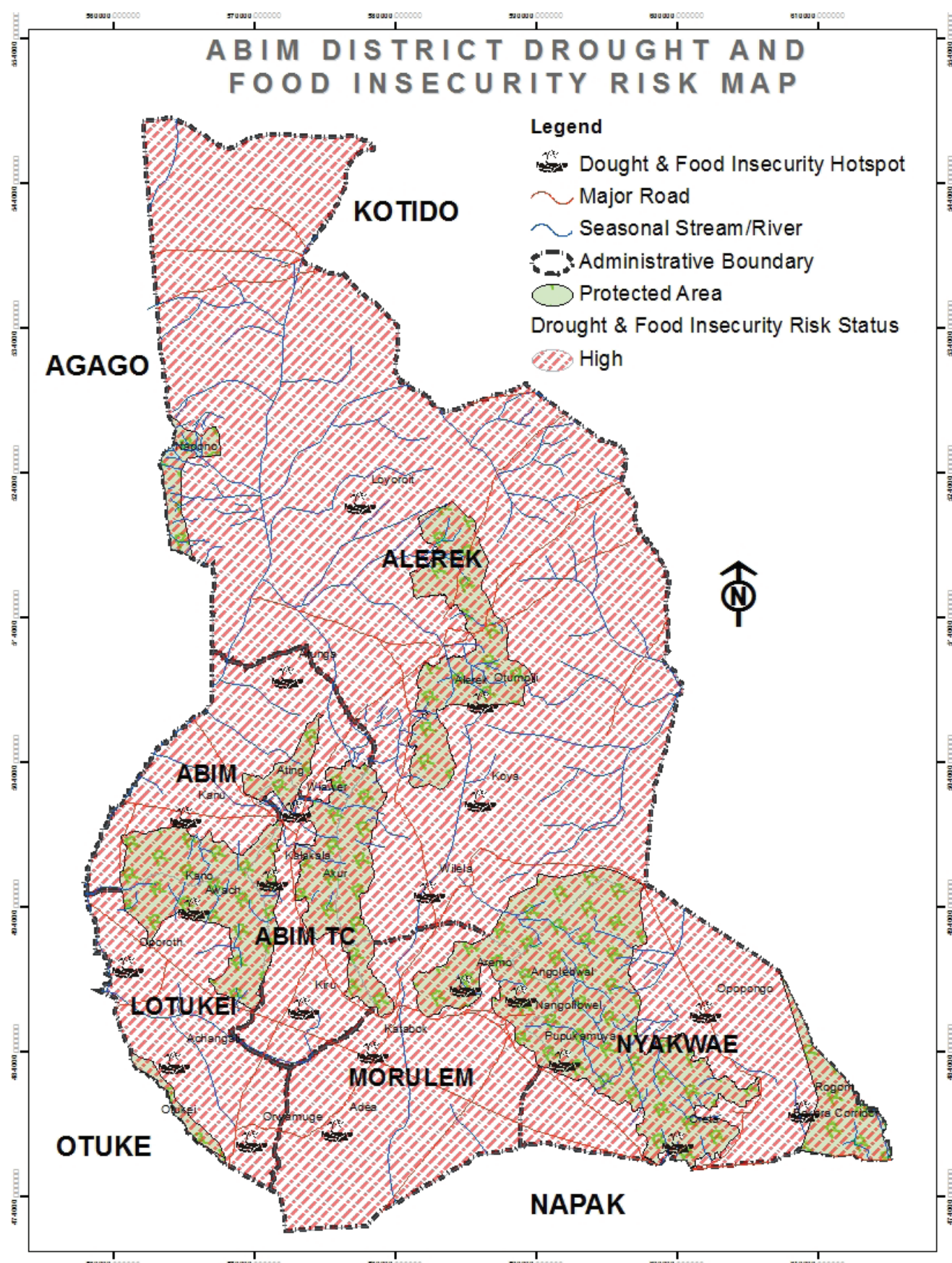


Figure 6 Drought risk



The risk for suffering food insecurity as a result of drought is very high across all sub-counties. Food insecurity indicators observed throughout the year include distribution of food to extremely vulnerable households in Nyakwae, Morulem, Alerek and Abim Sub-counties; households struggling with food issues, cases of poor food quality in the market for extremely high prices; people are observed going to the market without produce to sell and returning with loads of food items; households are eating the same kind of food every day; poor school attendance; antenatal care attendance and immunization coverage performance depend on the presence of food hand-outs in the schools and health institutions. Nyakwae Sub-County is particularly affected.



Crop and Animal Disease

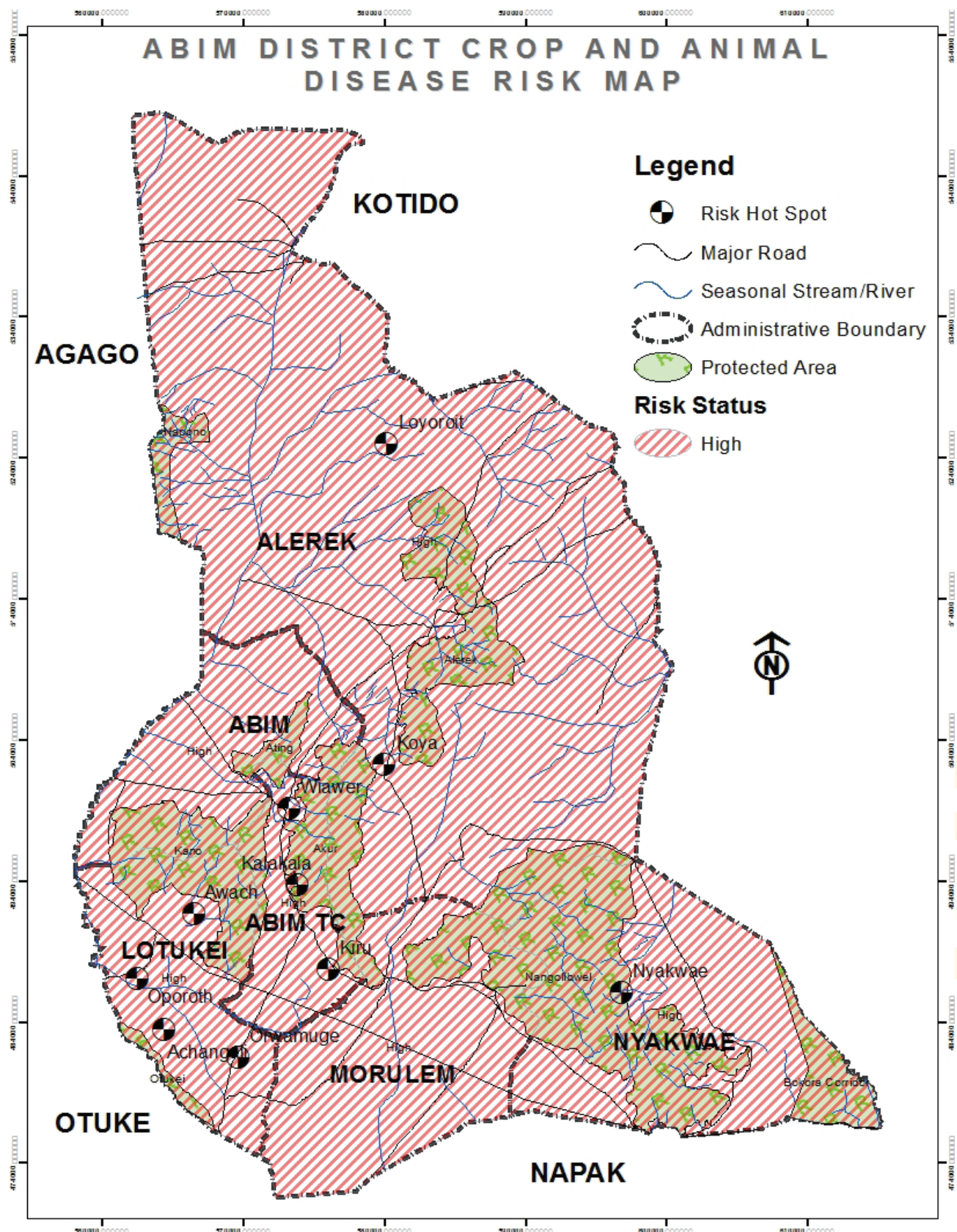


Figure 7 Crop and animal disease risk



Livestock rearing is the second most important livelihood option in Abim. The disarmament programme in Karamoja has created a conducive environment for livestock production that was previously threatened by cattle rustling. This coupled with restocking programmes have increased the number of livestock, specifically goats and cattle, in the District. However this is not matched with adequate veterinary services which are highly privatized and unaffordable to many, posing a high risk of losing the livestock to epidemics. The risk is escalated by the practice of uncontrolled trade in livestock and livestock products, poor crop and animal husbandry practices, and cross border movement of livestock especially in Alerek Sub-County and Nyakwae.

Tick borne diseases are endemic with sporadic increases during wet seasons, during November to March. Anaplasmosis claimed the lives of many animals including five cows belonging to the Sub-County chief of Alerek. Swine fever killed almost all pigs in April 2014 in Abim Sub-County alone.



ABIM DISTRICT LAND CONFLICT RISK MAP

Legend

- Land Conflict Risk Hot Spot
- Major Road
- Seasonal Stream/River
- Protected Area
- Administrative Boundary

Land Conflict Risk Status

- High
- Low

Map Labels: KOTIDO, AGAGO, ALEREK, ABIM, ABIM TC, LOTUKEI, OTUKE, MORULEM, NYAKWAE, NAPAK. Towns: Loydoh, Atinga, Odotipili, Jete, Koya, Wilela, Kuru, Achara, Owarunge, Adea, Oyel, Oporoth, Karu, Kalakala, Awach, Mawet, Nangasfurel, Boreya Confalit.

The improvement in the security situation and increased demand for food as a result of increased population has led to increased demand for land and consequent land-related conflicts. Disagreement is usually between family members, clans, sub-counties and across borders. With the resettlement agenda taken by the district, unregistered land titles and immigration from Teso and Kotido, conflicts have already occurred that threatened lives requiring police intervention to calm the situations. Most land conflicts result from high market demand for land, resettlement camps, unsurveyed lands, undemarcated lands, inadequate land title registry systems and immigrations. The area land committee at the Sub-County headquarters handles land issues. Land conflict in Lapono Sub-County is related to farm land; in Atunga the health centre II is disputed, as is Otalabar primary school. Another serious risk hot spot in the district is the border conflict between Otuke and Abim Districts. In Kotido border signposts have been uprooted and vandalized.

In Morulem Sub-County, there is serious conflict between the Iteso who migrated from various parts of Teso and settled in Nyar Kidi in Adea Parish. The same situation applies in Abim, Napak and Amuria at Kobulin. Cases related to some of this conflict are still in court and under police attention.

The impacts have been reported to include: agricultural production is halted for long intervals while a case is investigated and finally settled in court; people sustain fatal injuries in fights that arise from the land struggles; and disunity and conflicts in communities.



Vermin and Problem Animals

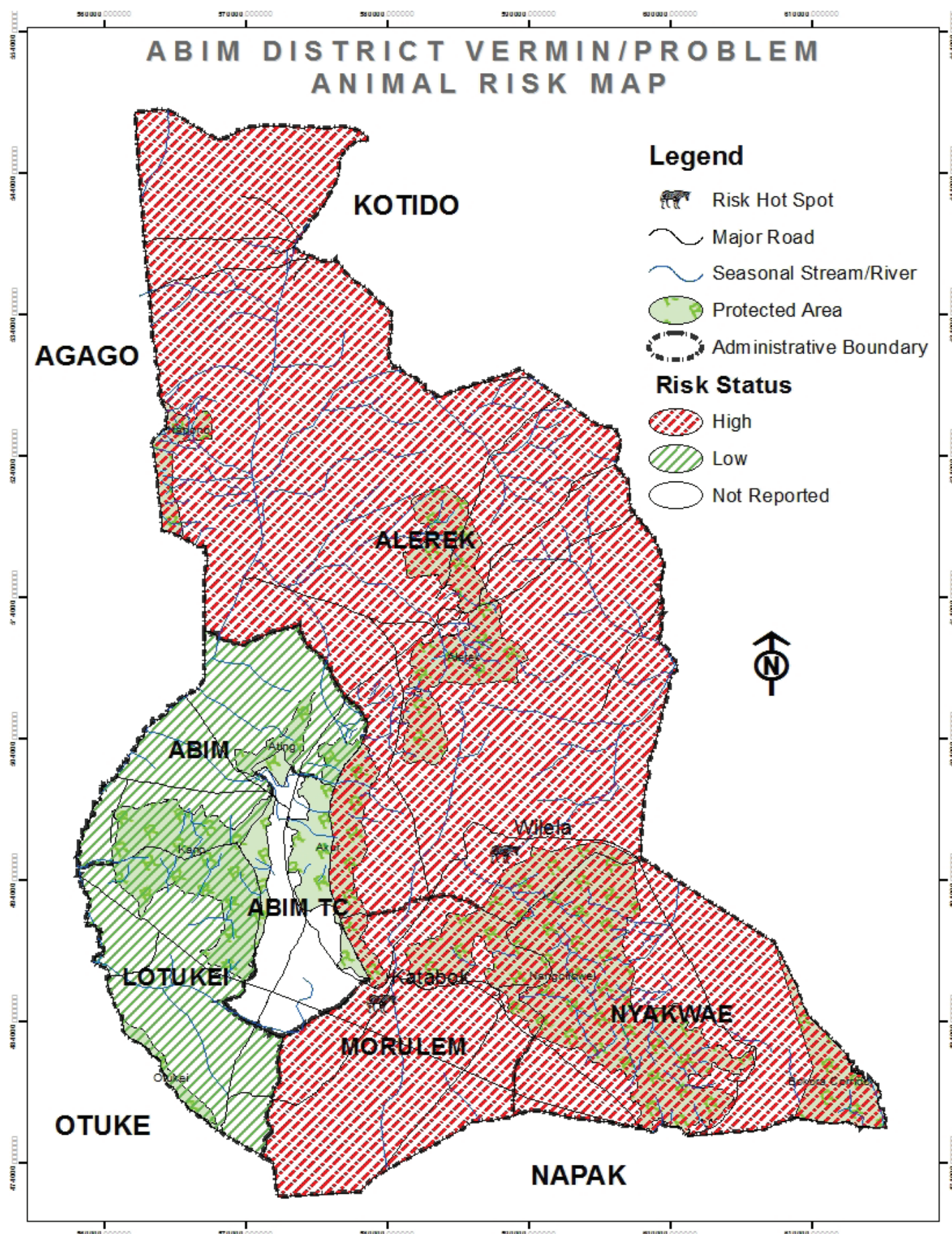


Figure 9 Vermin and problem animals risk



The risk of vermin is rated highest in Alerek Sub-County but there are no reports of vermin and problem animals in Abim Town Council. The most common vermin are cane rats, monkeys, baboons and squirrels. Cane rats are a major problem for sorghum growers, especially in August to December. Monkeys and baboons are a threat to cereals, legumes and goats. Problem animals like buffalos migrate yearly between November and February from Kidepo National park and cause havoc in Wilela parish in Alerek Sub-County and in Aywelu resulting in destruction of cassava plantations, and injury and death to some people.



Human Disease

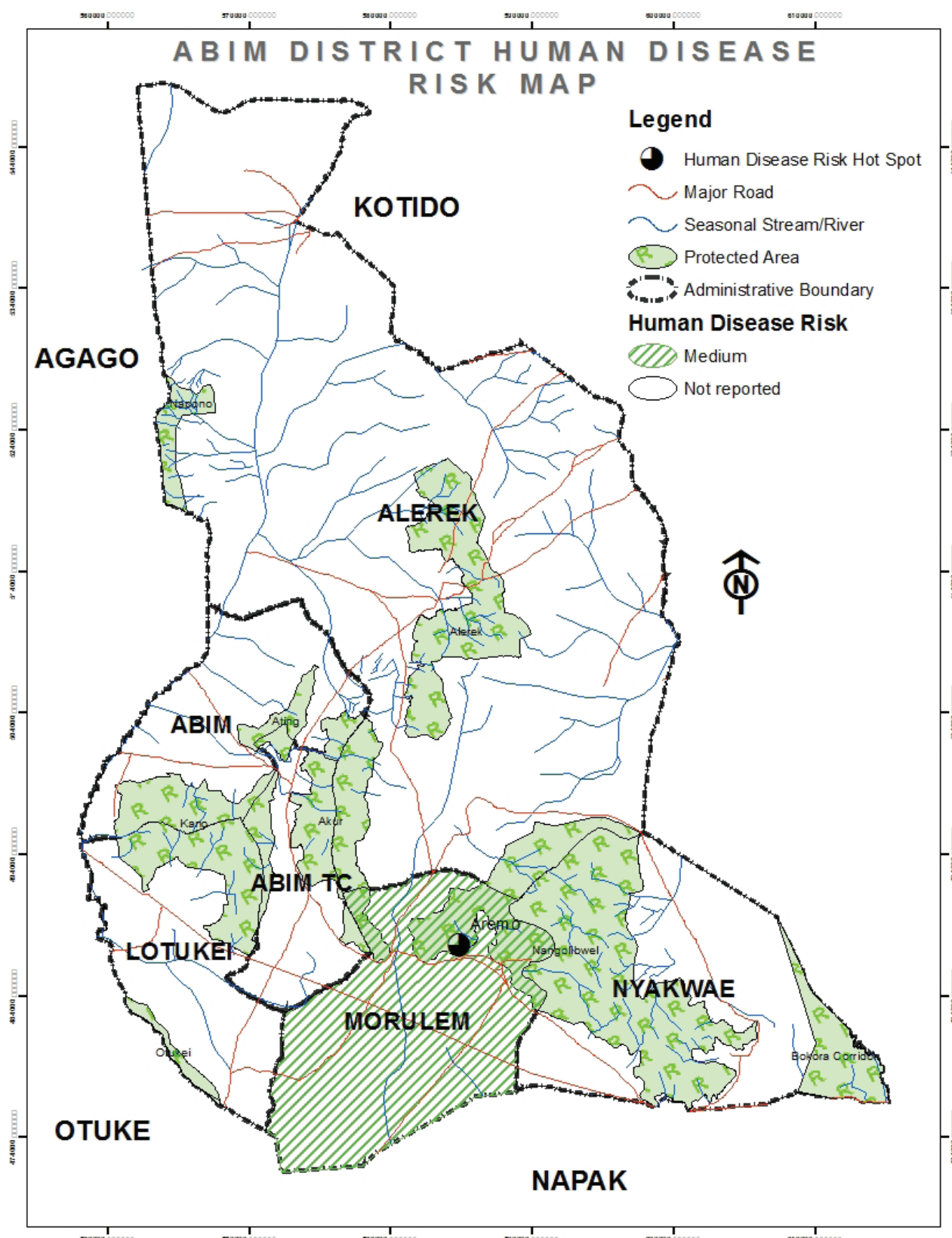


Figure 10 Human disease risk

Human disease in the district has yet to reach epidemic levels. However, disease risk in the district is elevated by the nature of crowded camp-like-settlements in the district, in Aremo Parish in Morulem, Katabok East in Morulem, Koya Parish in Alerek and Awach, where lack of space to construct pit latrines has resulted in low latrine coverage. The strange disease phenomena in Morulem Sub-County in 2010 is a serious warning.



Pests and Parasite Infestation

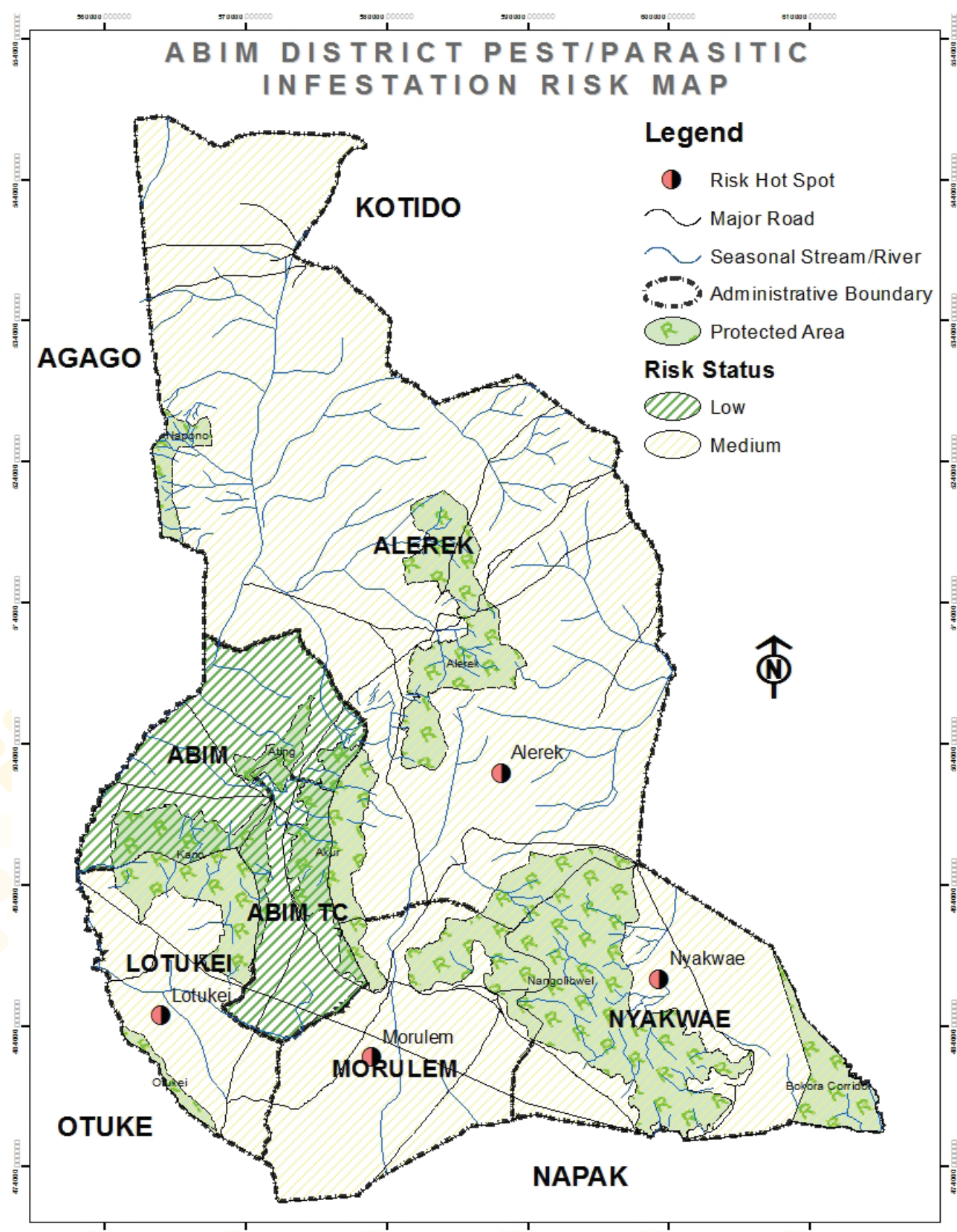


Figure 11 Pests and parasitic infestations

Termites are a major threat, especially with increased drought. The main risk hot spot is recorded in Morulem Sub-County. Others are reported in Alerek, Nyakwae and Lotukei parishes. However there are other pests including insects and larvae which destroy crop leaves and bore into plant stocks, causing poor crop harvests.

Landslide

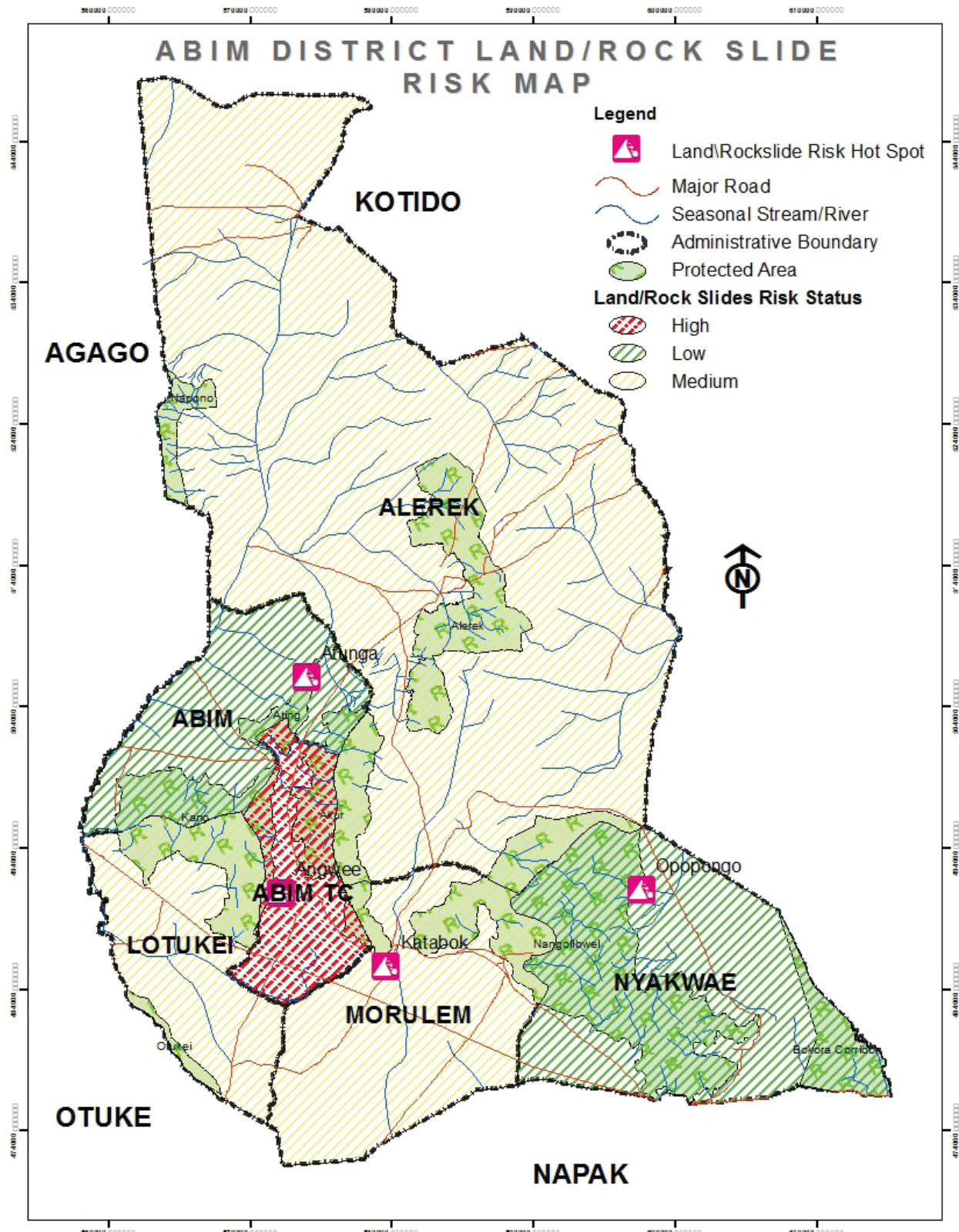


Figure 12 Landslide risk

The most landslide-prone settlements in Abim District are those at the foot of hills on which rest huge boulders that occasionally roll downhill threatening homesteads and cultivations. Heavy rain and slope degradation escalate the risk. The main hot spots have been reported in Katabok East in Morulem Sub-County in 1990, Angwee in Abim Town Council and Otopongo village in 2013. Others are in Otopongo Parish, Nyakwae Sub-County and Aunga Parish in Abim Sub-County. In general, the sloped topography of the district puts all of the sub-counties at risk.



Cattle Theft

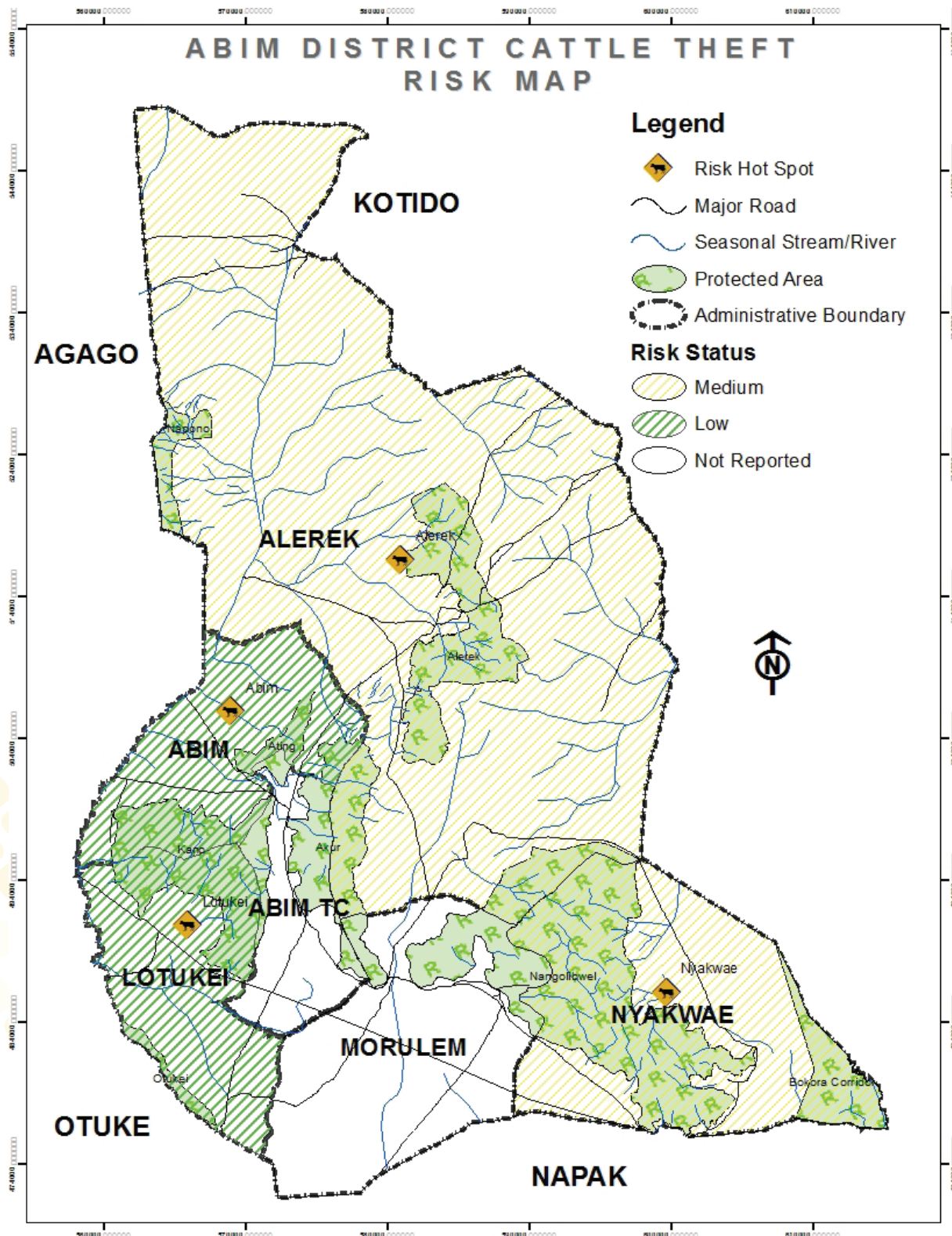


Figure 13 Cattle Theft Risk

Cattle theft is most pronounced in Nyakwae and Alerek Sub-Counties, causing loss of livelihood and even loss of life. During seasonal pastoral migration of livestock from Kotido to Abim and Pader districts, the herders concentrate in the border sub-counties of Alerek and Nyakwae in Abim district with cattle, goats, sheep, pigs, donkeys, turkeys, ducks and chickens, where they are threatened by theft.

Hailstorms and Lightning

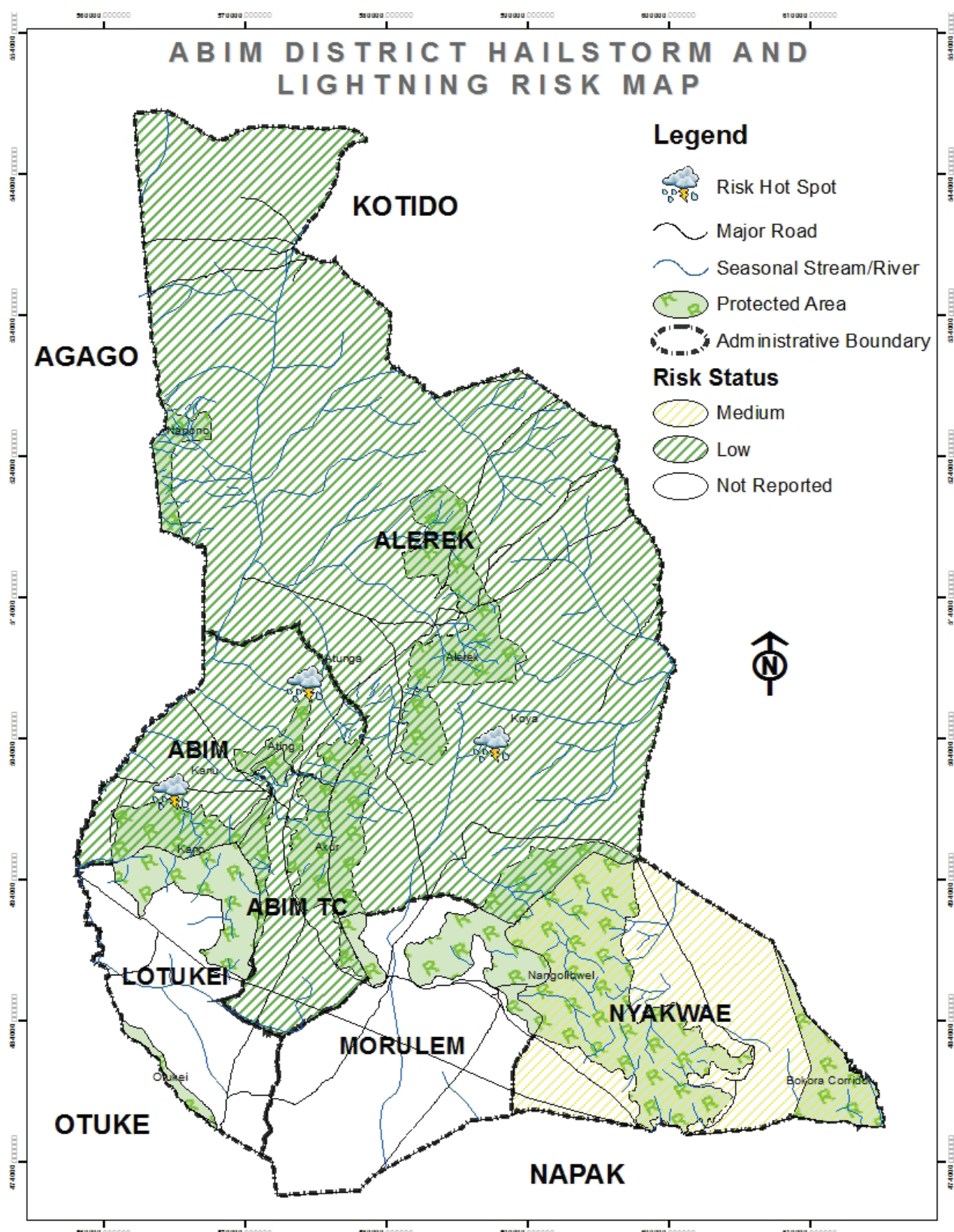


Figure 14 Hailstorm and Lightning Risk

Hailstorms and electrical storms were very common in the wet seasons 2012 and 2013, near the Kawomeri valley dam in Alerek Sub-County and Abim Sub-County. A person was killed by lightning in the Atunga parish. In another incident, lightning struck a rock and caused a landslide in Otabar East village.



Strong Winds

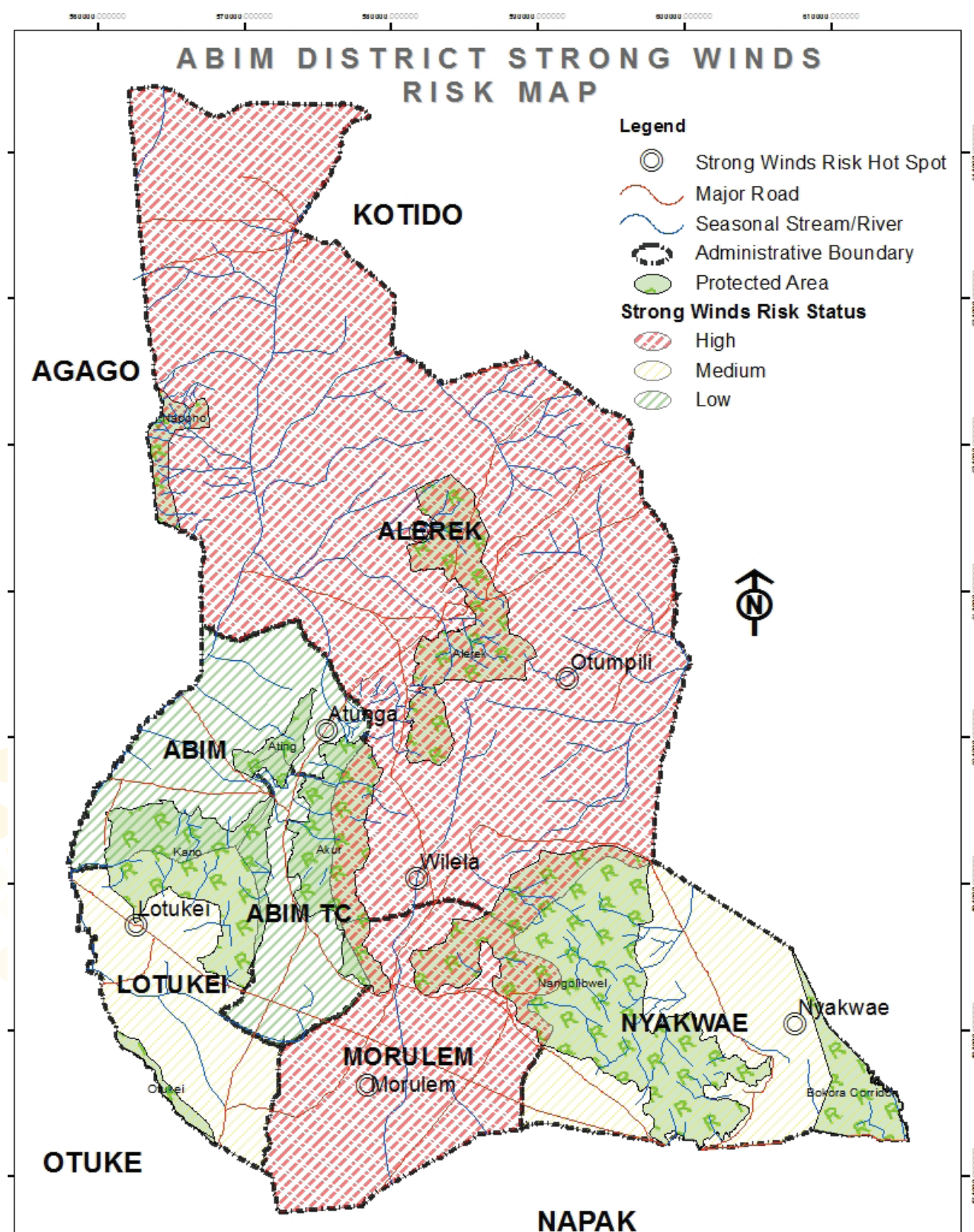


Figure 15 Strong Winds Risk

Every year between November and March, Abim District experiences strong winds that are mainly caused by environmental degradation linked to cutting down of big trees for charcoal and brick burning. The risk levels are high in Morulem and Alerek Sub-counties. Roofs of schools, households and institutions are often blown off due to strong winds. In Alerek Sub-County the Sub-County headquarters lost its roof and in Wilela the primary school roof was blown away.

Table 8 Hazard Risk

Hazard Category	Abim	Abim TC	Alerek	Lotuke	Morulem	Nyakwae
Floods	3	3	2	3	3	3
Crop and Animal disease	3	3	3	3	3	3
Drought	3	3	3	3	3	3
Hailstorms and Lightning	1	1	1	0	0	2
Strong Winds	1	1	3	2	3	2
Bush/Wild fires	1	0	3	1	1	3
Pests/Parasite infestations	1	1	2	2	2	2
Cattle theft	1	0	2	1	0	2
Environmental Degradation	2	1	3	1	2	2
Human Disease	0	0	0	0	2	0
Land/Rock Slides	1	3	1	1	2	1
Land conflicts	3	1	3	3	3	3
Rudimentary Mining Accidents	0	0	3	0	3	0
Vermin/Problem Animal	1	0	3	1	2	2
	21	17	32	21	29	28

Score: High = 3, Medium = 2, Low = 1, Not reported = 0

Table 8 quantifies the risk of each of the observed hazards in each Sub-County according to a scheme that assigns the value of 3 to “high risk”, 2 to “medium risk”, etc., according to community perception.

The rightmost column sums the risk values for each Sub-County in each hazard horizontally to rank the hazards in increasing risk within the district. The last row of the table sums the vertical risk values to indicate the relative vulnerability of each Sub-County.

The map in **Figure 11** classifies three levels of aggregated vulnerability defined as low, medium and high subranges of the total risk scores in **Table 10**.



VULNERABILITY

Risk Vulnerability Map

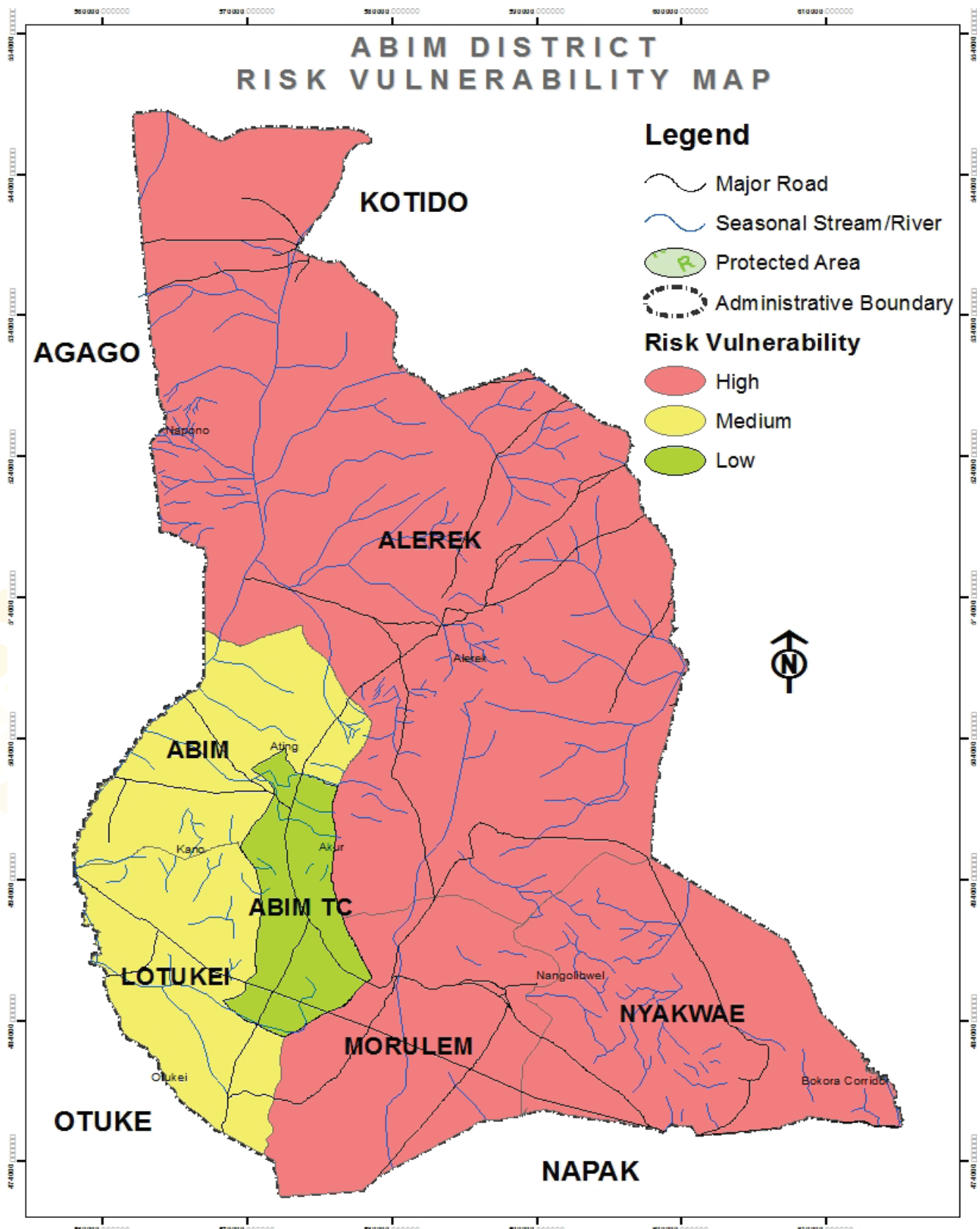


Figure 16 Risk Vulnerability Map

Being most exposed to hazard risks, Alerek, Nyakwae and Morulem record the highest aggregate vulnerability levels compared to the other sub-counties in the district. Prominent risks registered in those sub-counties are drought and food insecurity, crop and animal disease, land conflicts and floods.

Abim, Lotukei and Abim Sub-Counties rank as medium. While Abim Sub-County has many endemic hazards, it is not classified as highly vulnerable based on frequency and magnitude of loss suffered.

Abim Town Council ranks lowest with only floods, drought and food insecurity and landslides rating high risk. The rest of the hazards are rated as insignificant because most of them are assessed at the lowest levels of risk and vulnerability.



CONCLUSIONS

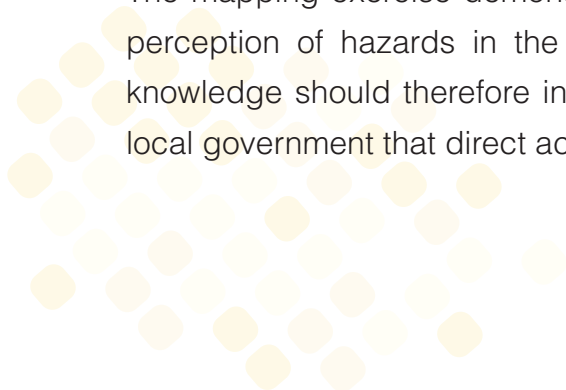
The multi-hazard vulnerability profile produced in this mapping exercise combines physical data and perceptual information captured with participatory methods in Abim District. It provides an understanding of how the district perceives each hazard based on likelihood of occurrence and its impact on the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

The findings identify drought, floods, crop and animal disease, land conflicts, bushfires, pests infestations, environmental degradation, strong wind, vermin and problem animals, landslides, cattle theft, hailstorms and lightning, mining accidents and human disease as the predominate hazards in the district, in order of decreasing risk.

Drought, floods, crop and animal disease, and land conflicts ranked closely as the most dangerous and high-risk hazards for people in Abim District.

All of the sub-counties have significant vulnerability to disaster, accumulating risk from several hazards. Alerek, Nyakwae and Morulem record the highest aggregate vulnerability levels compared to the other sub-counties in the district. Even the least vulnerable, Abim Town Council, has high risk of floods, drought and landslides. 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 Abim District. This disaster risk knowledge should therefore inform the disaster mitigation plans developed by the Abim district local government that direct actions to minimize the impacts of hazards.



DEFINITION 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, Marburg, 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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