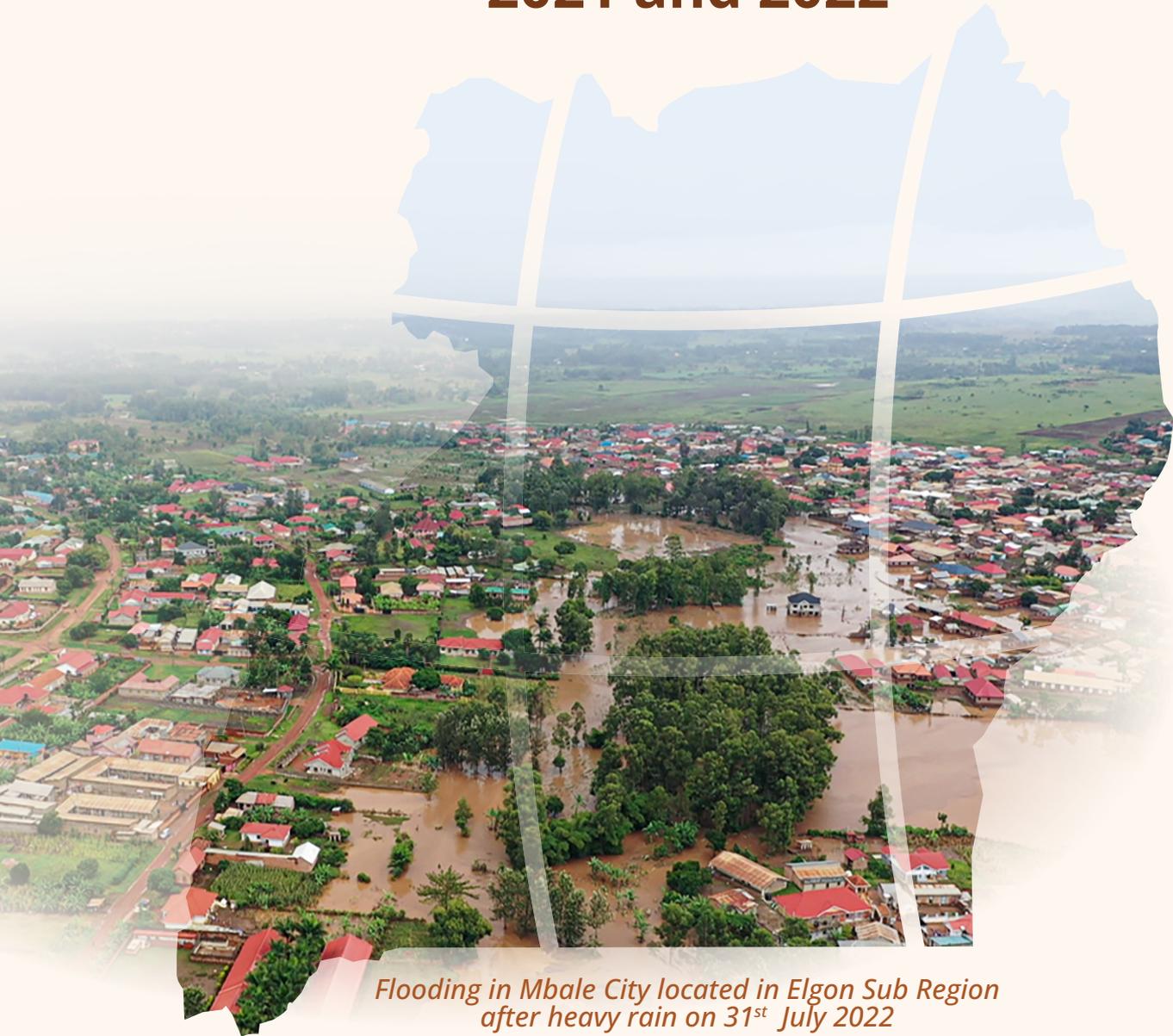




THE REPUBLIC OF UGANDA

OFFICE OF THE PRIME MINISTER
P.O. Box 341, Kampala

ANNUAL STATE OF DISASTER REPORT (ASDR) 2021 and 2022



*Flooding in Mbale City located in Elgon Sub Region
after heavy rain on 31st July 2022*



FOREWORD

The Office of the Prime Minister; Department of Relief, Disaster Preparedness and Management would like to present the 2nd (second) installation of the Annual State of Disaster Report (ASDR) for Uganda. The Annual State of Disaster Report covers two years; 2021 and 2022, tracking disaster occurrences for 24 months through-out the country.

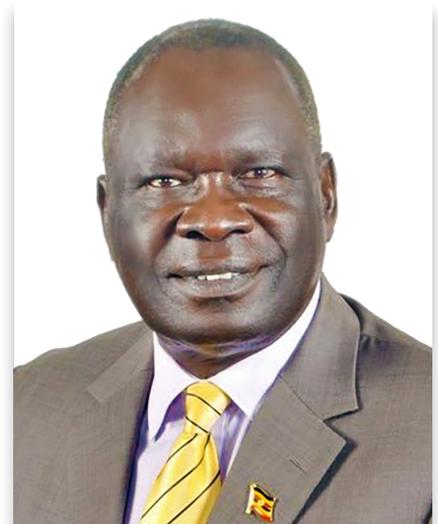
Compilation of the ASDR is mandated under the National Policy for Disaster Preparedness and Management, approved by Cabinet and signed in 2011. Uganda experienced economic losses due to disasters in both 2021 and 2022 just as had happened the previous year in 2020. It's important to note that despite the increase in the number of hazard incidents and disaster occurrences, the country has remained steadfast in combating these challenges. In 2020, economic losses to disaster amounted to over UGX 500bn which was a rather unique year due to the prolonged rains occurring over two years in 2019 and 2020 causing huge destruction. However, in 2021 and 2022, despite the continued drought in Karamoja, impact of COVID19 that carried on from 2020, and floods in Elgon and Teso sub regions in August 2022, the economic losses for the two years have been at an average of UGX 248bn. Further to this, the department working with different Ministries, Departments, Agencies and district local governments maintains her role of reporting under the Sendai Framework. Through this responsibility and in line with the theme of "substantially increasing the availability of and access to multi hazard early warning systems and disaster risk information and assessments to people by 2030" during the International Day for Disaster Reduction 2022, this report shows an improvement in the use of early warning that makes me hopeful of reducing economic losses to disasters.

The ASDR 2021 and 2022, reflects the commitment of Government to take stock of what impacts and threatens to recede her development gains. Disasters are a part of our society and dealing with them through documentation of their impacts is beneficial to development programming processes under the National Development Plan framework and governments objective of attaining middle income status for a resilient population.

For God and My Country.



Hon. Eng. Hilary O. Onek (MP)
Minister for Relief, Disaster Preparedness and Refugees



INTRODUCTION

The country has experienced a wave of recurring disasters such as prolonged dry spells, erratic and extreme rainfall events that have caused seasonal failure of various crops, deaths, losses and damages on livelihoods. The country has also suffered a number of emerging disasters and their impacts such as diseases of public health importance like COVID 19, Ebola, Crop Pests and Diseases, hailstorms, lightning, road and water accidents to mention a few.

During the two years of the Annual State of Disaster Report, 2021 and 2022, as a country we have had to show our resolve as a government in the face of economic hardships brought about by COVID19. In the same vein, the resilience of communities and households faced by disasters has shown through the social capital and culture of our communities. Despite the huge damages suffered by our economic infrastructure, alternatives have been provided to the different challenges paused by disasters, which has been a credit to our disaster risk governance.

As we move to mitigate and alleviate the threats paused by different hazards on different sectors of the economy we need to use baselines such as the ASDR to show us what we have overcome in the past as a measure of how far we can go through a whole of Government approach. The Government of Uganda has put in place frameworks to combat disasters such as the Disaster Risk Management plan, that was launched by the Rt. Hon. Prime Minister in September 2022. This is a ten (10) year multi sectoral plan to enable the country mitigate and better prepare to manage disasters.

Similarly, we are working on having the Disaster Preparedness and Management Bill in place to legislate on the gaps faced by the different stakeholders in implementation of interventions.

We therefore, remain committed to improve the policy and legal infrastructure of disaster preparedness and management in Uganda through sound data management approaches acting as an additional tool to achieve sustainable development.

For God and My Country.



Hon. Dr. Lillian Aber (MP)
**Minister of State for Relief, Disaster Preparedness
and Refugees**



ACKNOWLEDGEMENT

Office of the Prime Minister (OPM) is mandated to assess and compile an annual report on the state of disaster and its impacts on the country, as well as its management.

The Annual State of Disaster Report (ASDR) is a comprehensive account of disaster impacts that occurred in the country in a given year. Consequently, ASDR for 2021&2022 is meant to provide an update on the status of disasters and their related impacts on the different sectors in the country for the period 2021-2022, while also providing much-needed statistics and information for planning and decision-making. This ASDR follows the ASDR 2020, which provided details of losses and damages incurred by different sectors and programmes as a result of disasters for the year 2020.

Uganda faces a number of hazards on an annual basis, some of which culminate in disasters such as loss of life and damage to property. With some districts facing more complex forms lasting for more than a year, disasters have threatened to erode past economic gains. Disasters are faced by communities in the different districts and therefore, the ASDR 2021 and 2022 maintained the methodology set by its predecessor in 2020, of analyzing disasters by regions. Similarly, a mixed methods approach employing both quantitative and qualitative methods of data management was used through a questionnaire showcasing collaboration between different levels of government.

Several MDAs and partners of government particularly, Uganda Bureau of Statistics (UBOS), participated in analysis of the data collected from districts as well as World Food Programme (WFP), United Nations International Children’s Emergency Fund (UNICEF) among others. I wish to extend our gratitude to the different MDAs, DLGs and Partners that participated in the different processes of the compilation and publication of this report.

Lastly, this comprehensive report is expected to provide a perspective to the risks that affect our development planning as it complements chapter 24 on risk management under the National Development Plan III. This informative report is expected to influence planners at the different levels and programmes of government to ensure risk informed planning and implementation of government programmes.



Dunstan Balaba,
Permanent Secretary



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DEFINITION OF KEY TERMS

Disasters:

A disaster is a sudden, calamitous event that seriously disrupts the functioning of a community or society and causes human, material, and economic or environmental losses that exceed the community's or society's ability to cope using its own resources.

Droughts:

Drought is defined as a period of abnormally dry weather that persists long enough to produce a serious hydrologic imbalance (for example, crop damage, water supply shortage, etc). The severity of the drought depends upon the degree of moisture deficiency, the duration and the size of the affected area.

Floods:

A flood is a high flow of water, which overtops either the natural or artificial banks of a river. They induce disasters when human settlements have an overflow of water beyond the normal confines and humans are unable to cope with the calamity or when they result in the destruction of crops, social and economic infrastructures.

Epidemics:

The World Health Organization defines an epidemic as "an unusually large or unexpected increase in the number of cases of the disease for a given time, place or period." There are common human epidemics in Uganda such as cholera, measles, typhoid, HIV AIDS, malaria and dysentery. There are also livestock diseases such as the Contagious Bovine Pleural Pneumonia (CBPP), foot and mouth disease and corridor disease.

Pests:

A pest is an animal, insect or plant that causes damage to crop plants or animals by feeding on them. Ticks, larger grain borer, the African army worms, stock borer, tsetse fly, locusts, rodents, termites and aphids are all common to Uganda.

Environmental Degradation: This is a reduction of the capacity of the environment to meet socio-economic objectives and needs. Examples are land degradation; deforestation; desertification; loss of bio-diversity; pollution (land, water and air); ozone layer depletion; indiscriminate throwing of garbage; illegal quarrying and mining; and drilling of boreholes close to sewer systems.

Internally-Displaced Person (IDP):

An internally-displaced person is a person (or a group of persons) who has been forced or obliged to flee or leave his or her home or place of habitual residence, in particular as a result of, or in order to avoid the effects of armed conflict, situations of generalized violence, violations of human rights or natural or human-made disasters. And who has not crossed an internationally recognized state border. Such a person must enjoy the protection of the country of asylum in line with International Humanitarian Law governing the status of internally-displaced persons.

Accidents:

An accident is an unintended and harmful result of human activity that threatens or causes injury, death, destruction or loss of property. Some of the common accidents include explosions, road traffic, industrial, fire, mine and marine.

Human / Animal Conflict:

The rights to animal space are interfered, with the presence of human developmental activities and eventually leads to animals attacking human beings and vice versa, and animals being indiscriminately killed by persons.

EXECUTIVE SUMMARY

The ASDR for 2021&2022 was guided by a data collection exercise on the impacts of hazards on different sectors/programmes and agencies. The exercise was conducted in 14 sub regions, involving 52 districts in Uganda. Districts were selected using purposive random sampling to ensure coverage of hazards by sub region and attain representative data on sectoral impacts of hazards. Key district local government officials were interviewed with a questionnaire to provide data to the assessment team. A disaster assessment tool (designed by OPM supported by UBOS) was used to guide the interviews with key informants. Field visits were conducted to some areas previously affected by disasters with a view to attaining pictorial evidence of disaster damages and losses.

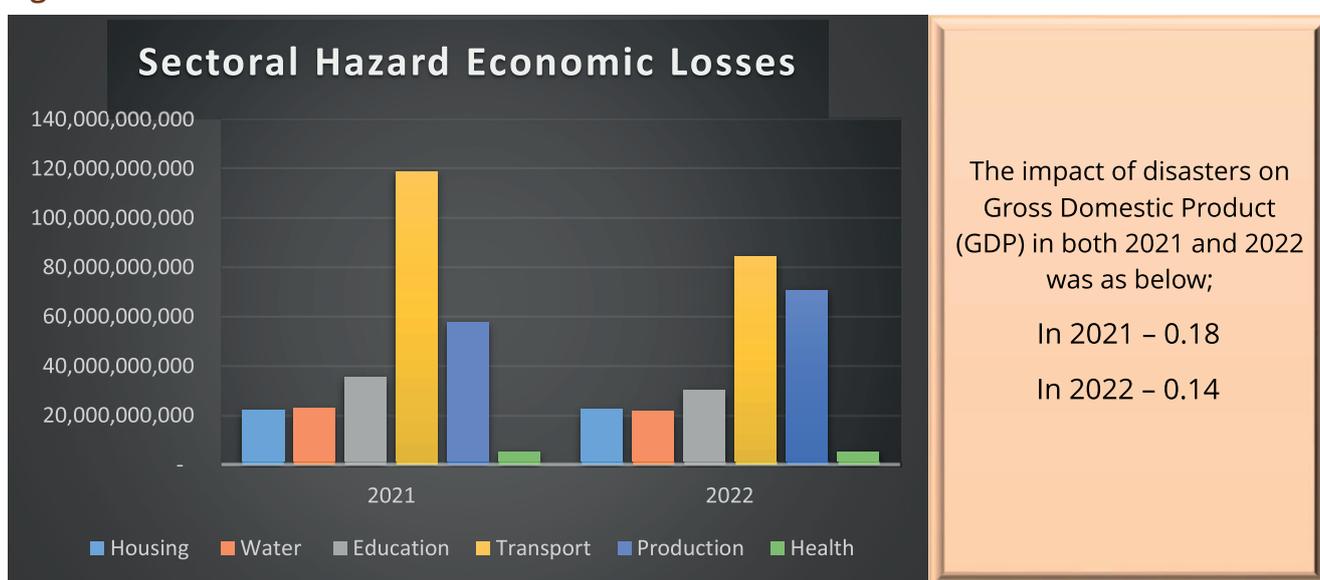
Assessment results show that the 2021 hazards had the most overall effect on the agriculture sector (80%), followed by health (49%) and education (43%), with the least affected sector being energy (17%). Specific assessment of hazard impacts on selected sectors reveals that, whereas agriculture, health, and education were the most affected overall, landslides and hailstorms (100%), prolonged dry spells (100%), droughts (100%), floods (96%), pests and diseases (95%), impacted significantly on the agriculture sector; epidemics (78%), pandemics (71%) and floods (61%), impacted the education sector; plus, pandemics (94%) and drought (61%) affect the health sector significantly. Similarly, in 2022, the agriculture sector suffered the greatest disaster effects (84%), which was consistent with 2021 as the most affected sector. Environment (55%) was the second most affected sector in 2022 as compared to the health sector in 2021, and the least affected sector in 2022 was energy. In addition, conflict, drought, prolonged dry spells, and hailstorms were the biggest contributors to disaster effects on agriculture. This was also consistent with the main types of disaster effects on agriculture in 2021. Whereas the environment sector was mostly affected by floods (90%) and droughts (75%).

From a regional perspective, West Nile and Elgon sub regions had the largest impacts inflicted on the education sector in 2021 (100%), followed by Lango (92%), Karamoja (90%), and Busoga (50%) sub regions. While on agriculture, it was highest (100% of respondents acknowledged) in Elgon (through the landslides and floods) and West Nile (through the prolonged drought). Generally, disasters largely affected the agricultural sector in all sub regions as compared to other sectors. Also looking at health as one of the second most affected sectors, Buganda South suffered the most effect (100%), followed by Bukedi and West Nile (71%), and Kigezi incurred the least disaster effect. The education sector suffered the most from Buganda South (89%), followed by Bukedi (71%), Karamoja (70%), and Ankole was the least affected sub region. The regional effect of disasters in 2022 was highest in Buganda South, Busoga, and West Nile at 100 percent on the agriculture sector, whereas the effect on the environment was highest in West Nile (88%) and Bukedi (86%).

Table 1: Summary of Sectoral Economic Impacts of Disaster

SN.	Sector	2021	2022
1.	Housing	22,049,123,000	22,402,863,000
2.	Water	22,917,922,000	21,684,049,728
3.	Education	35,647,262,120	30,173,053,432
4.	Transport	118,792,547,003	84,394,806,681
5.	Production	57,566,869,145	70,695,097,145
6.	Health	5,350,000,000	5,350,000,000
Total		262,323,723,268	234,699,869,986

Figure 1. Sectoral Hazard Economic Losses



Specifically;

Agriculture Sector:

Hazards in 2022 led to estimated damages of key crops amounting to 1,934,245 hectares up from 1,671,009 hectares of agriculture crop land in 2021, this translated to an estimated loss of 23.9 billion Uganda shillings in 2022 up from 17.9 billion Uganda shillings in 2021 (i.e. 33.7% increase in 2022). Prolonged dry spells resulted into 103 million acres of damages for root crops translating into an economic loss of 13.4 billion Uganda shillings as the single biggest negative impact during the year 2022. The overall loss in livestock due to disasters was 386,060 translating into a combined economic loss of 57.6 billion Uganda shillings for the years 2021 and 2022. The loss of cattle was 29,165 heads of cattle resulting into estimated loss of 19.3 billion Uganda shillings followed by goats with a loss of 2.8 billion Uganda shillings from 52,902 goats lost.

Housing Infrastructure:

The 2021 and 2022 hazards also resulted into a total housing infrastructure damage and loss of 7,671 structures, causing an estimated economic loss of 55.6 billion Uganda shillings. In 2021, Rwenzori sub region suffered the biggest housing infrastructure damages and losses resulting from completely destroyed houses (3.2 billion Uganda shillings), and cracked walls (2.9 billion Uganda shillings), followed by West Nile sub region with the biggest estimated loss (1.3 billion Uganda shillings) from cracked walls in houses. In 2022, Lango sub region suffered the most hazard damages with cracks on houses (756), with an estimated loss of 2.8 billion Uganda shillings, followed by 198 completely destroyed houses with an estimated loss of 2.5 billion Uganda shillings from the Rwenzori region.

Water and Sanitation:

A total of 10,067 water sources were destroyed, floods accounting for nearly 71 percent followed by prolonged dry spell with 16.89 percent. There was a reduction in number of water sources destroyed by 35.4 percent from 5,791 in 2021 to 4,276 in 2022. Public Water Stand were the most damaged scheme with 35.5 percent followed by well spring with 35.35 percent in 2021 while well springs were the most damaged in 2022 with 49.52 percent. Hazards destroyed a total of 551 boreholes with an estimated loss worth 6.9 billion Uganda shillings, followed by gravity flow damages (27 schemes) with an estimated loss of 5.9 billion Uganda shillings in the year 2021. In 2022, latrine facilities (2,400) incurred the biggest damages, with an estimated loss of 5.97 billion Uganda shillings followed by gravity scheme (44 schemes) with an estimated loss of 5.3 billion Uganda shillings.

Education subsector:

Education institutions were majorly affected by hail/windstorms, followed by floods, and the least effects were from landslides. Overall, primary education sub sector experienced the biggest losses from damages to 180 blocks partially destroyed and 134 completely destroyed blocks, valued at 8.4 billion Uganda shillings and 12.1 billion Uganda shillings, respectively in 2021. In 2022, a similar pattern was observed where 187 blocks in the primary sub sector were partially destroyed and up to 173 were completely destroyed with estimated cost of economic losses amounting to 8.4 billion Uganda shillings and 11 billion Uganda shillings, respectively. In the secondary education sub sector, 28 blocks were partially damaged in 2021 more than 2022 with 26, despite a higher economic loss in the latter. This however, was quite different with a lower economic cost from the completely destroyed blocks in 2022 compared to 2021. Hazards were observed to have registered a much smaller impact on tertiary education sub sector, with a total of 14 blocks either partially or completely damaged. Overall the cost of damages was higher for the completely destroyed blocks across all three sub sectors in both 2021 and 2022. As per the regional analysis, Rwenzori and Ankole registered the highest economic losses for 2021 and 2022 respectively in the primary sub sector while in 2021, Rwenzori equally registered the highest economic loss and Bukedi in 2022, for the secondary school sub sector.

Protection services:

Hazards affected a total of 16,830 child-headed households especially those arising from hailstorms (4,263 households – contributing 25% overall), followed prolonged dry spell (2,489 households, contributing 14% overall) in 2021. Similarly, 313,998 female-headed households were affected and the greatest impact was caused by prolonged dry spells (154,345 households, contributing 49.2% overall), followed by the pandemic –COVID19. The largest impact was in the female headed household, 18 and 6 times more than the child head households and elderly head households, respectively. The number of GBV cases reported against women increased from 2,487 in 2021 to 2,968 in 2022 (i.e. hence realizing an increase of 16.2% women abused). Girls suffered more in both 2021 and 2022 with 2,927 and 6,524 GBV cases reported. Mental and physical GBV cases were the highest reported throughout the two years of the assessment. In 2021, Acholi registered the most GBV cases for women and Kigezi sub region for girls while in 2022, Kigezi registered the highest number of GBV cases for both women and girls. However, Acholi registered the highest figures across most categories of GBV. Children separations and disappearances were mostly caused by pandemics and highest in Kigezi for child separations in 2021/2022 and Rwenzori for child disappearances in 2021 and Buganda North in 2022.

Transport infrastructure (Roads, Bridges and Culverts):

Hazards caused a significant impact on roads across all sub regions in 2021 compared to 2022 in terms of kilometers (i.e. 56,980 Kms of roads completely destroyed, 92% higher than in 2022), translating into an economic loss of UGX 28.6 billion Uganda shillings. National roads faced the largest negative impact from hazards with economic losses estimated at 20.5 billion Uganda shillings and 16.3 billion Uganda shillings for the year of 2021 and 2022, respectively.

Disaster damages to gravel roads were majorly caused by floods, hailstorms and landslides (especially for district roads). Bridge damages were highest on foot bridges where 93 bridges were completely destroyed and 175 bridges partially destroyed with costs in losses estimated at 36 million Uganda shillings, followed by damages to six (6) beam bridges completely destroyed and 21 partially destroyed with a total estimated loss of 70 million Uganda shillings. Compared to 2022, disasters largely contributed to destruction of foot bridges where 348 were completely destroyed and 402 were partially destroyed with estimated cost of losses of up to 103 million Uganda shillings.

Overall, floods, landslides, hail/wind storms were the main of cause damages on foot bridges, suspension bridges, and beam bridges in 2021. Specifically, hail/wind storms destroyed the biggest number of foot bridges where 70 were completely destroyed and 120 were partially destroyed, with estimated losses of 5.5 million shillings. However, floods contributed largely to the number of beam bridges destroyed with an estimated loss amounting to 50.4 million shillings. In comparison with 2022, floods, landslide and hailstorm inflicted the greatest damage on bridges. Floods alone completely destroyed 223 beam bridges, and partially destroyed 247 of them with a total estimated loss of 289 million shillings.

In 2021, Lango registered the most damages in foot bridges, Busoga for suspension bridges and beam bridges. Rwenzori sub region (456) registered the highest foot bridges, Buganda North (72) suspension bridges and Acholi sub region (27) beam bridges in 2022. While pipe concrete culverts registered the most losses in 2021 and 2022, however, box concrete culverts registered the most economic losses.

Energy subsector:

In the year 2021, a total of 1,110 energy points were destroyed, translating to an estimated economic loss of 11 billion Uganda shillings and an estimated economic loss of 981 million Uganda shillings to the mineral sub sector. Hail/wind storm had the greatest damage on energy points (745 points – contributing 66.9% of energy loss) with a significantly high estimated economic loss of 1.8 billion Uganda shillings, followed by lightning (258 points –contributing 23.2% of energy loss) with estimated loss of 2.1 billion Uganda shillings, almost 1.5 times higher than loss attributed to hailstorms. In the year 2022, a total of 8,404 energy points were destroyed, translating to an estimated total loss of 5 billion Uganda shillings i.e.53.5% less than in the year 2021 although the energy points damaged were higher in 2022 by 662.5% than in 2021. An estimated loss of 296 million Uganda shillings to the mineral sub sector was realized in 2022, i.e. 69.7% lower than that in 2021.

Health sector:

Health sector disaster analysis involved establishment of public health emergencies (PHE) created by several disease incidences/cases and the resultant cases of human deaths during the 2021-2022 period. Accordingly, the country experienced 13 public health emergencies leading to 3029 deaths in 2021 and 348 deaths in 2022, indicating a reduction in cases between the two years. COVID19 and Crimean Congo Hemorrhagic Fever were the highest contributors to death cases followed by Rift Valley Fever, anthrax and yellow fever. In terms of prevalence, COVID19 had the biggest number of registered cases in both 2021 (140,737) and 2022 (169,985) followed by malaria outbreak (36,817), Brucellosis (210), Ebola (164), Anthrax (140) and poisoning (77). Regionally, the central region majorly registered more cases of Brucellosis (210) followed by the Crimean Congo Hemorrhagic Fever (49), Yellow fever (25) and 17 undiagnosed illness while Rift valley fever had only one case registered. Northwestern region experienced more of Anthrax (57) cases followed by Methanol poisoning (29) while yellow fever (2) had the least number of cases. In western Uganda, PHEs were mainly attributed to cyanide poisoning (39) and Rift valley fever (35) and the least was a case of yellow fever. 44 cases of Anthrax and 6 cases of rift valley fever were registered in south-western. Northern region experienced more of Measles and three cases of Crimean Congo Hemorrhagic Fever. All cases of malaria outbreak (36817) were registered in eastern Uganda which means that this region is at a high risk of such emergencies.

Other PHEs registered in the eastern region include Anthrax (39), Crimean Congo Hemorrhagic Fever (15) and food poisoning (8).

Health sub sector was largely affected by floods and landslides with Rwenzori sub region suffering the most damages and economic loss. Rwenzori sub region had 4 health center III's reported to have been affected by landslides and floods followed by Lango sub region with 3 health center III's that needed to be relocated due to floods. The total economic cost suffered by the Health sector in both 2021 and 2022 was estimated at Ugx 5,350,000,000.

Pre-existing capacity:

In the year 2021, Uganda had 79.2 percent of District Disaster Management Committees (DDMCs), functional, whereas in 2022, the committees increased to 91.3%. In both years, DDMCs were functional across most sub regions. Bugisu, Teso, Karamoja, Lango, Acholi, Tororo and Ankole sub regions had fully functional DDMC whereas only Kigezi sub region had the least proportion of functional. DDMC meetings in 2021 and 2022 were mainly held on quarterly basis in most sub regions with most districts having minutes as a sign of holding meetings 67.4% and 70.5% in 2021 and 2022 respectively. 52 percent of districts did not have disaster preparedness and management plan in 2021, there was a more than 8 percent decrease in number of districts without disaster preparedness and management plan in 2022.

Further, 58.7 and 63.4 percent of the districts have mainstreamed the DPM in the DPP or sector work plans in 2021 and 2022 respectively. The number of mainstreamed DPM into DPP by districts decreased by 4 percent in 2022 less than 37 percent. 42.6 and 39.1 percent of districts in 2021 and 2022 respectively, received the UNIEWS bulletin from Office of the Prime Minister.

With regard to the availability of multi hazards warning systems that ease information sharing and flow in the affected districts, only 34 percent of the districts had multi hazard warning system in 2021 and 42.2 percent in 2022. The early warning systems covered both the scientific and indigenous early warning systems. The most frequently used multi hazard early warning systems in place for the year 2021 were mass notification, outdoor public warning system, SMS text systems, and organization emergency alerts. In the year 2022, there was a significant increase in the use of all alert systems in place against various disaster types.

Most of the disaster information was shared on quarterly basis in 2021 (63%) and (57%) in 2022. While least frequency of disaster information sharing was on weekly in 2021 (2.2%) and in 2022 (2.4%).

Pests and diseases followed by floods, drought/ prolonged dry spells and pandemics were observed to have the most available information from the available multi hazard warning systems across the two (2) years of assessment while frequency of sharing information was largely on quarterly basis.

Emergency support and relief;

Most districts were found to have received relief food across the two years of assessment in 2021 and 2022 with over 70%. Most of the districts were observed to have received relief food in 2021 which can be attributed the COVID19 pandemic where relief food was provided to a number of households unable to work due to stringent lock down measures.

The ASDR assessment for 2021/22 shows that Uganda is still susceptible to multiple disasters, with some regions at greater risk of specific disasters, yet disaster management efforts are still less developed. There is therefore a need to build community resilience, develop and strengthen early warning systems, improve sectoral coordination for disaster management, and increase resource allocation to disaster management institutions.

1. BACKGROUND

1.1 Background

Uganda has over the years been faced with a number of hazards that have culminated in disasters causing loss of life and damage to property. Disasters have threatened to erode economic gains, with some districts facing complex disasters lasting more than a year. Preparedness measures enshrined in some district contingency plans have increased over the last year, though limited by the available resource envelope. Uganda's performance in attaining its strategic development objectives continues to be hampered, and it is therefore important that disasters be assessed and documented annually for future planning purposes.

Uganda's National Policy for Disaster Preparedness and Management (2011) mandates the Office of the Prime Minister to formulate an Annual State of Disaster Report (ASDR) by the close of February every year. Prior to this, district local governments are tasked with releasing state of disaster reports by close of January every year that are to be harmonized at the national level. The ASDR is a comprehensive report that provides an overview of hazard incidents that occurred in Uganda in a given year and their negative impact. The previous ASDR 2020, released in 2021, provided details of losses and damages incurred by different sectors/ programmes of the Government of Uganda.

This information was shared with different Ministries, Departments and Agencies (MDAs) and used in discussions to improve government preparedness and response efforts for disasters. The Annual State of Disaster Report for 2021&2022 was meant to provide an update on the status of hazards and their related impacts on different sectors in the country, while providing much needed statistics and information for planning and decision making.

1.2 Rationale of the report

As much as Office of the Prime Minister is mandated to coordinate disaster management in the country, it is also required to assess and compile annual reports on the state of disasters and their impacts in the country.

This Annual State of Disaster Report is meant to provide an update on the status of disasters and their related impacts on different sectors/programmes in the country, while providing much needed statistics and information for planning and decision making.

This will improve Governments' preparedness and response plans towards disaster impacts on lives and livelihoods of communities emanating from 2021 - 2022 disasters. Further, the report informs the extent of socio-economic damage and loss through evaluating hazard risk and vulnerability conditions with the aim of proposing interventions required from key sectors of Education, Agriculture, Transport, Health, Water, Environment and Housing. The state of the disaster report is for the year 2021 and 2022.

1.3 Scope of the report

The Annual State of Disaster Report for the year 2021&2022 concluded in 2023 was to facilitate planning, implementation and monitoring of hazards and their impacts in the country. The exercise was guided by the post-disaster needs assessment and their associated impacts on different sectors/programmes and agencies.

The assessments were conducted in 14 sub-regions (accounting for 52 districts in Uganda as indicated in Table 2 below) at country level. The sub regions included Central i.e. Buganda North and South; Karamoja; Teso; Elgon; Lango; West-Nile; Busoga; Bukedi; Acholi; Bunyoro; Toro; Ankole; and Kigezi.

Analysis of disaster impacts was conducted at sector level including social sectors (housing, education, health); production sectors (agriculture, commerce and trade, and industry), infrastructural sectors (works and transport, telecommunications, security, and energy and mineral development) and cross-cutting sectors (water and environment and gender).

Table 2: Assessment of District Local Governments affected by Disasters in 2021 & 2022

SN	Statistical Region	District Local Governments
1.	Busoga	Buyende, Kaliro, Namayingo, Namutumba
2.	Bukedi	Butaleja, Kibuku, Tororo
3.	Elgon	Bududa, Kapchorwa, Kween, Sironko
4.	Teso	Katakwi, Ngora, Serere, Kalaki
5.	Lango	Alebtong, Amolatar, Dokolo, Lira
6.	Karamoja	Kaabong Moroto, Napak
7.	Acholi	Agago, Gulu, Lamwo
8.	West Nile	Adjumani, Koboko, Yumbe, Obongi
9.	Bunyoro	Buliisa, Kibaale, Kagadi, Kakumiro
10.	Buganda North	Buvuma, Kayunga, Kiboga, Nakasongola
11.	Buganda South	Lwengo, Masaka, Kyotera
12.	Toro	Bundibugyo, Kasese, Ntoroko, Kitagwenda
13.	Ankole	Bushenyi, Isingiro, Kazo, Buhweju
14.	Kigezi	Kisoro, Rukungiri, Rukiga, Rubanda

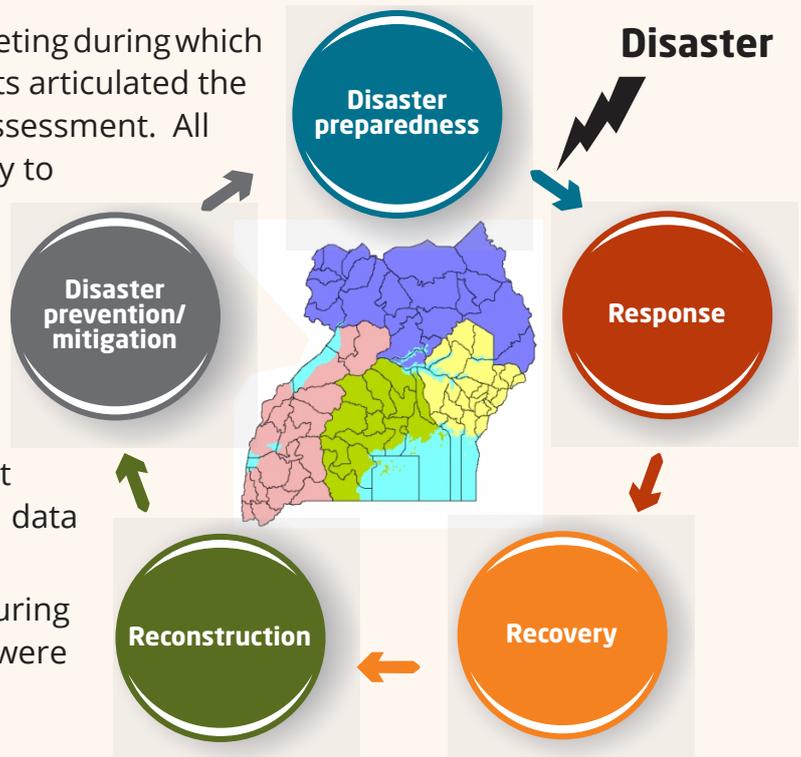
2. METHODOLOGY

A holistic post-disaster needs assessment was the first step taken to develop the Annual State of disaster Report for Uganda for the year 2021&2022. The assessment was conducted between November 2022 and February 2023. This methodology is important in the assessment of damages and losses as well as the nature of disasters. Consultations and key informant interviews were held with key stakeholders in each sector/department of each district, mainly the District Disaster Management Committees including the heads of production, natural resources, health, education, water, housing, works and technical services. The district local governments were tasked to gather secondary data for their district state of disaster report. Data collected from districts was consolidated by Office of the Prime Minister and triangulated with other data/information needs.

The process started with a kick-off meeting during which sector coordinators and other experts articulated the objectives and the scope of the assessment. All key stakeholders had the opportunity to influence indicator identification and tool development before meeting the District Disaster Management Committees.

A Disaster Needs Assessment Tool designed by OPM was used to guide the consultations and key informant interviews. During fieldwork and data collection, sev

eral sites damaged by disasters during the period under consideration were visited and assessed in each district.



Districts were selected using purposive random sampling to ensure coverage of common hazards by sub region so as to ensure sufficient data for analysis of key affected programmes by sub region by clustering/stratification. Key District Local Government Officials were interviewed with a questionnaire to provide data to the assessment team.

Analysis of the data was conducted using computer aided software such as stata in which the data captured was entered and cleaned before simple descriptive statistics were obtained. Statistics such as averages and proportions were further used to attain the cumulative impact of hazards on key sectors in different periods of time. This can be seen from the different tables and figures that were produced reflecting the impact of various hazards in the districts

3. SOCIAL DEMOGRAPHIC INDICATORS

3.1 Life expectancy and household population for the year 2021 and 2022

Table 3 below summarizes the projected life expectancy and projected household population for selected districts in the country as at 2021&2022. Accordingly, the average life expectancy has increased by 0.5% from the year 2021 (63.73 years of age) to 2022 (64.06 years of age) for the selected sub-regions, although across the sub regions, life expectancy is similar for the respective years.

The projected household population shows that there is an increase in household population by 3.1% from the year 2021 to 2022. The highest household population is observed in Buganda North for the two years.

Table 3. Life Expectancy Indicator from Selected Sub Regions for the Year 2021/2022.

Region	Life Expectancy		Projected Households	
	2021	2022	2021	2022
Acholi	63.73	64.06	369,380 (68.9%)	381,060 (69%)
Ankole	63.73	64.06	820,040 (153%)	835,840 (151%)
Buganda North	63.73	64.06	1,278,160 (238.4%)	1,338,240 (242.2%)
Buganda South	63.73	64.06	673,800 (125.7%)	686,380 (124.2%)
Bugisu	63.73	64.06	364,860 (68.1%)	375,980 (68%)
Bukedi	63.73	64.06	465,920 (86.9%)	479,980 (86.9%)
Bunyoro	63.73	64.06	879,100 (164%)	918,260 (166.2%)
Busoga	63.73	64.06	965,280 (180.1%)	990,340 (179.2%)
Karamoja	63.73	64.06	241,360 (45%)	249,120 (45.1%)
KCCA	63.73	64.06	341,980 (63.8%)	347,720 (63%)
Kigezi	63.73	64.06	156,600 (29.2%)	158,580 (28.7%)
Lango	63.73	64.06	502,740 (93.7%)	516,620 (93.5%)
Sebei	63.73	64.06	72,880 (13.6%)	75,360 (13.6%)
Teso	63.73	64.06	460,600 (85.9%)	475,940 (86.1%)
Toro	63.73	64.06	323,920 (60.4%)	332,180 (60.1%)
West Nile	63.73	64.06	660,560 (123.2%)	680,960 (123.2%)
Grand Total	63.73	64.06	536,073.75	552,660.00

3.2 Gender and population in the selected sub-regions

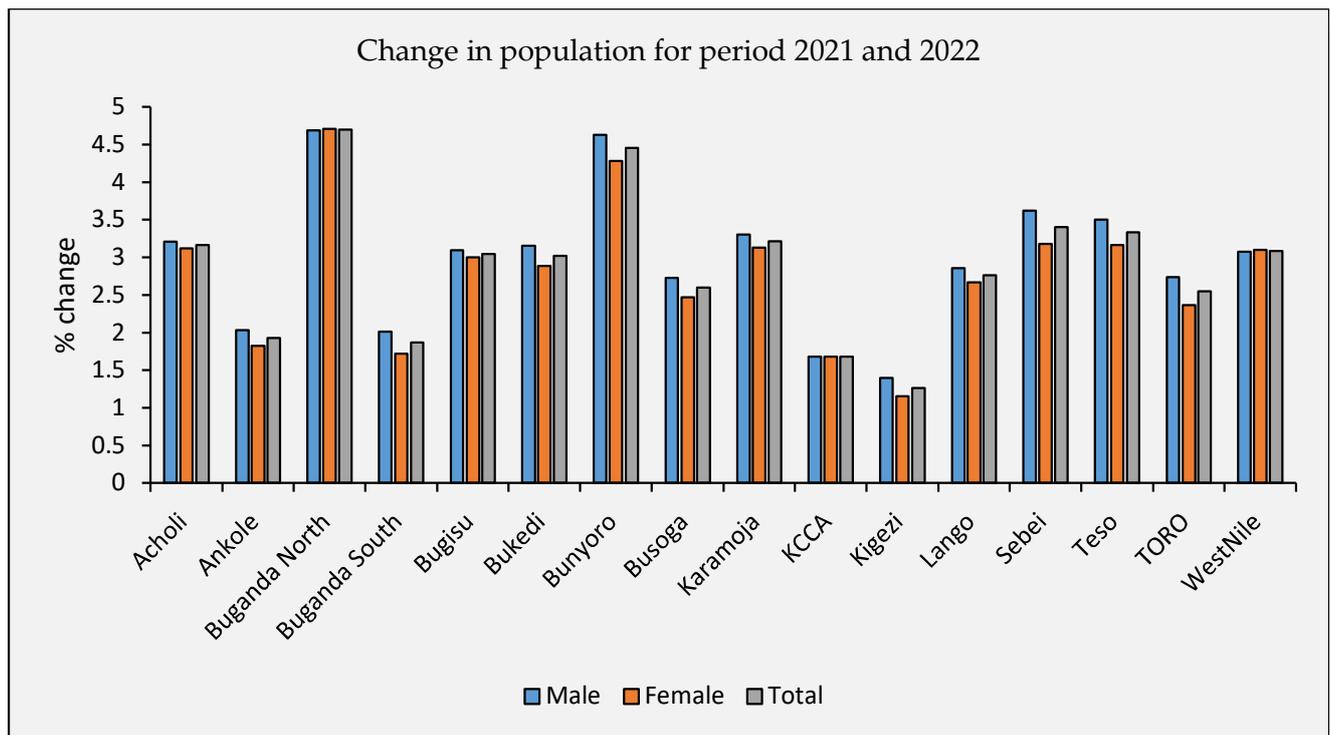
Accordingly, Table 4 indicates that the highest population is in Buganda North and lowest in Sebei sub-region for the years 2021&2022 for both male and female. The female population is higher than the male population by 3.3% for both years in the selected sub-regions. There is an increase in total population from 2021 to 2022 by 3.1%. Figure 2 below, shows an increasing trend in the population from 2021 to 2022 for each gender. The highest population increase was observed in Buganda North with both male and female at 4.7%.

Male population increased more than female in most sub-regions across the country. The lowest population increase was observed in Kigezi sub-region with a 1.35% population increase compared to other sub-regions.

Table 4. Population (gender disaggregated data) for selected sub regions for the year 2021/2022

Sub region	Population by gender 2021			Population by gender 2022		
	Male	Female	Grand Total	Male	Female	Grand Total
Acholi	904,000	942,900	1,846,900	933,000	972,300	1,905,300
Ankole	2,003,200	2,097,000	4,100,200	2,043,900	2,135,300	4,179,200
Buganda North	3,143,700	3,247,100	6,390,800	3,291,100	3,400,100	6,691,200
Buganda South	1,697,700	1,671,300	3,369,000	1,731,900	1,700,000	3,431,900
Bugisu	897,500	926,800	1,824,300	925,300	954,600	1,879,900
Bukedi	1,141,600	1,188,000	2,329,600	1,177,600	1,222,300	2,399,900
Bunyoro	2,220,400	2,175,100	4,395,500	2,323,100	2,268,200	4,591,300
Busoga	2,370,300	2,456,100	4,826,400	2,435,000	2,516,700	4,951,700
Karamoja	580,900	625,900	1,206,800	600,100	645,500	1,245,600
KCCA	809,900	900,000	1,709,900	823,500	915,100	1,738,600
Kigezi	366,000	417,000	783,000	371,100	421,800	792,900
Lango	1,235,100	1,278,600	2,513,700	1,270,400	1,312,700	2,583,100
Sebei	185,000	179,400	364,400	191,700	185,100	376,800
Teso	1,138,900	1,164,100	2,303,000	1,178,800	1,200,900	2,379,700
Toro	803,800	815,800	1,619,600	825,800	835,100	1,660,900
West Nile	1,590,600	1,712,200	3,302,800	1,639,500	1,765,300	3,404,800
Grand Total	21,088,600	21,797,300	42,885,900	21,761,800	22,451,000	44,212,800

Figure 2. Percentage change in population for the selected sub regions for year 2021/2022



4. OVERVIEW OF DISASTERS FOR THE YEAR 2021 AND 2022

This chapter presents an overview on the types of hazards and their impacts which occurred in the year 2021&2022 across selected sub regions including period of occurrence and magnitude. Further, the chapter explicitly dissects the distribution of hazards by region and month including impacts on selected sectors.

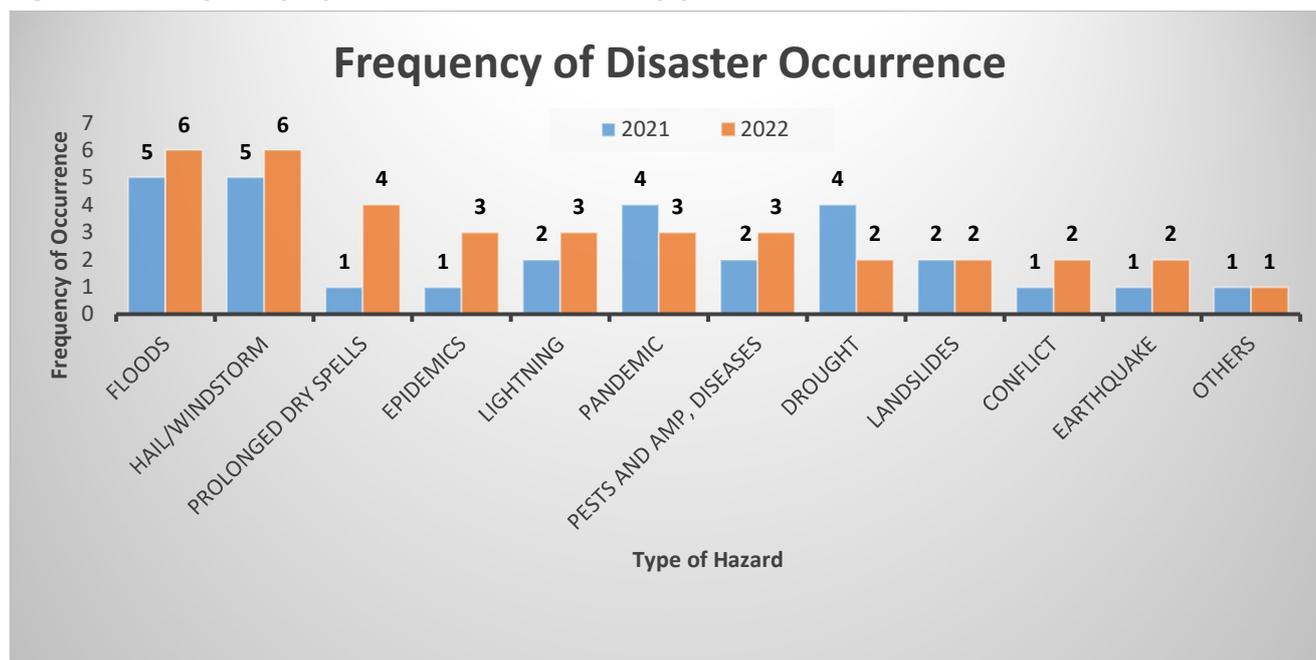
4.1 Type of Hazard by year of Occurrence

Table 5 presents occurrence of hazards in the year 2021 and 2022 by the different types of disasters that occurred in the district during the last 12 months of each year. The findings from this assessment revealed that there was a slight increase of 1 percent in disaster occurrence from 51 percent in 2021 to 52 percent in 2022. Floods, hailstorm, epidemics, pest and diseases, prolonged dry spells and pandemic occurred most frequently in the districts in the year 2021. Whereas in 2022 was mostly hit by hailstorm, followed by floods, prolonged dry spell and pest & diseases, details are provided in Table 5 and Figure 3 below.

Table 5. Shocks/Emergencies across the districts during the year 2021 and 2022

Roster of hazard that occurred in the district in the last 12 months.	Hazard occurrence in your District (Percent of response)			
	2021		2022	
	No	Yes	No	Yes
Floods	14.29	85.71	17.65	82.35
Drought	57.14	42.86	52.94	47.06
Prolonged Dry Spells	34.69	65.31	21.57	78.43
Landslides	67.35	32.65	64.71	35.29
Hail/Wind Storm	16.33	83.67	5.88	94.12
Epidemic	57.14	42.86	50.98	49.02
Lightning	51.02	48.98	49.02	50.98
Pandemic	36.73	63.27	52.94	47.06
Earthquake	83.67	16.33	82.35	17.65
Conflict	51.02	48.98	62.75	37.25
Pests & Diseases	28.57	71.43	21.57	78.43
Other	65.31	34.69	56.86	43.14
Total	43.33	48.98	41.48	50.83

Figure 3. Frequency of disaster occurrence by year



4.2 Period of Occurrence

Table 6 shows the distribution of disaster occurrence by type of hazard across different months in 2021. The assessment revealed that in 2021, March and April were the most hit by disaster occurrence of about 73 times, followed by July and August of about 70 and 68 number of occurrences respectively. These findings also indicate that pandemic (specifically COVID19), floods and hailstorm were the highest types of disaster occurrence for the months that were hit most by disaster occurrence. Whereas in 2022, April was the most affected by disaster occurrence (73 times) followed by March (63 times), February (63 times) and August (61 times). This assessment further reveals that prolonged dry spell, pests & diseases, pandemic and conflict had the most occurrence from February to April whereas August was mostly affected by floods, hailstorm, pandemic, pest and diseases as detailed in Table 7 below.

Disaster occurrence by sub region reveals that Kigezi, Karamoja and Teso sub regions were the most affected across the last 12 months of 2021. Specifically, the monthly effect of disaster across the sub regions occurred mostly in the months of March, April, July, August, September and October as indicated in Figure 4 below. The most disaster hit sub regions in 2022 were Kigezi, followed by Ankole, North Buganda, West Nile and Karamoja. These sub regions were mostly affected in the months of April, followed by March, February, and August as indicated in Figure 5 below.

Table 6. Distribution of disasters by frequency during the year 2021

Type of hazard	Jan		Feb		Mar		Apr		May		Jun		Jul		Aug		Sep		Oct		Nov		Dec	
	No	Yes																						
Floods	35	7	35	7	33	9	29	13	31	11	31	11	32	10	30	12	30	12	31	11	35	7	34	8
Drought	14	7	13	8	14	7	16	5	17	4	16	5	15	6	18	3	18	3	16	5	16	5	18	3
Prolonged Dry Spells	26	6	26	6	25	7	28	4	28	4	28	4	27	5	30	2	30	2	31	1	27	5	27	5
Landslides	14	2	14	2	14	2	13	3	13	3	13	3	13	3	13	3	14	2	11	5	14	2	14	2
Hail/Wind Storm	40	1	40	1	39	2	33	8	38	3	38	3	38	3	34	7	33	8	38	3	36	5	39	2
Epidemic	16	5	17	4	16	5	17	4	17	4	17	4	17	4	17	4	17	4	17	4	17	4	17	4
Lightning	22	2	22	2	22	2	20	4	21	3	21	3	20	4	20	4	22	2	22	2	22	2	21	3
Pandemic	17	14	18	13	16	15	19	12	19	12	19	12	19	12	19	12	19	12	19	12	19	12	19	12
Conflict	14	10	14	10	15	9	17	7	17	7	16	8	16	8	16	8	17	7	17	7	17	7	16	8
Pests & Diseases	30	5	28	7	26	9	28	7	28	7	29	6	27	8	27	8	29	6	31	4	31	4	29	6
Other	17	0	17	0	17	0	16	1	16	1	17	0	15	2	17	0	17	0	17	0	15	2	15	2
Total	252	60	251	61	243	69	243	69	252	60	252	60	246	66	248	64	253	59	257	55	256	56	256	56

Table 7. Distribution of hazard by frequency during the year 2022

Type of disaster	Jan		Feb		Mar		Apr		May		Jun		Jul		Aug		Sep		Oct		Nov		Dec	
	No	Yes																						
Floods	39	3	39	3	38	4	36	6	37	5	38	4	37	5	34	8	37	5	38	4	37	5	39	3
Drought	18	6	18	6	19	5	21	3	20	4	19	5	20	4	22	2	23	1	22	2	22	2	22	2
Prolonged Dry Spells	28	12	28	12	24	16	24	16	31	9	30	10	34	6	35	5	36	4	38	2	38	2	38	2
Landslides	15	3	15	3	15	3	14	4	15	3	15	3	15	3	13	5	14	4	15	3	15	3	15	3
Hail/Wind Storm	46	2	46	2	46	2	41	7	45	3	45	3	43	5	38	10	39	9	43	5	42	6	44	4
Epidemic	22	3	22	3	22	3	21	4	23	2	23	2	23	2	23	2	23	2	23	2	23	2	23	2
Lightning	23	3	23	3	23	3	23	3	23	3	23	3	23	3	23	3	23	3	23	3	23	3	23	3
Pandemic	16	8	16	8	16	8	17	7	17	7	17	7	17	7	17	7	16	8	17	7	17	7	18	6
Conflict	11	8	11	8	11	8	13	6	14	5	14	5	14	5	14	5	15	4	15	4	15	4	15	4
Pests & Diseases	33	7	33	7	32	8	28	12	28	12	32	8	32	8	32	8	32	8	32	8	33	7	34	6
Other	18	4	18	4	18	4	19	3	19	3	18	4	18	4	20	2	18	4	18	4	17	5	18	4
Total	277	60	277	60	272	65	265	72	280	57	282	55	284	53	279	58	284	53	292	45	290	47	297	40

Figure 4. Distribution of Hazard by Month of occurrence and sub region 2021

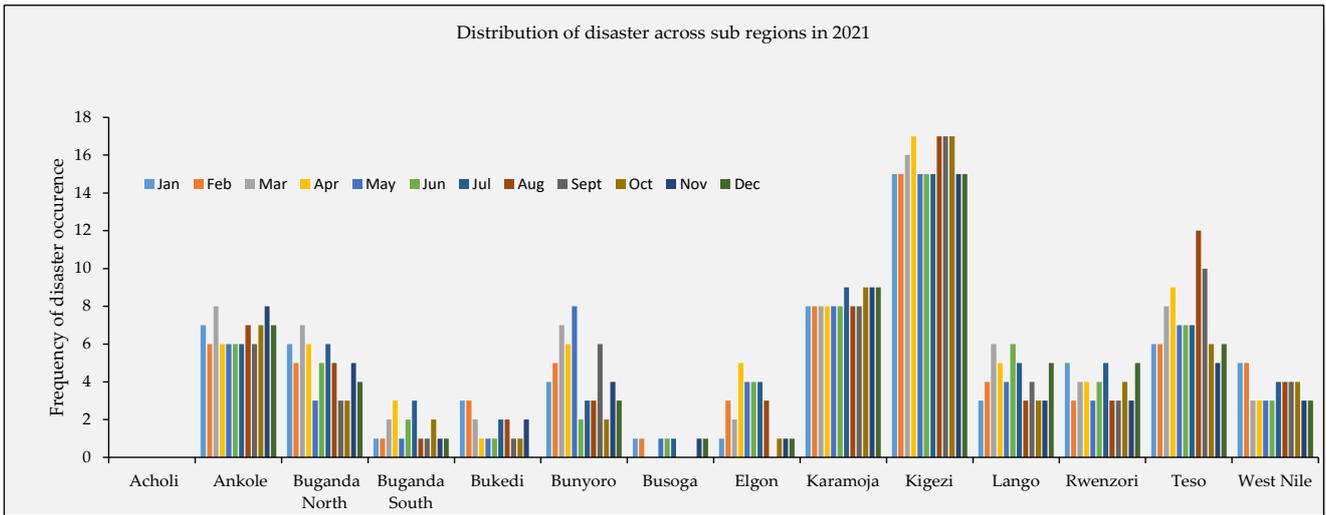
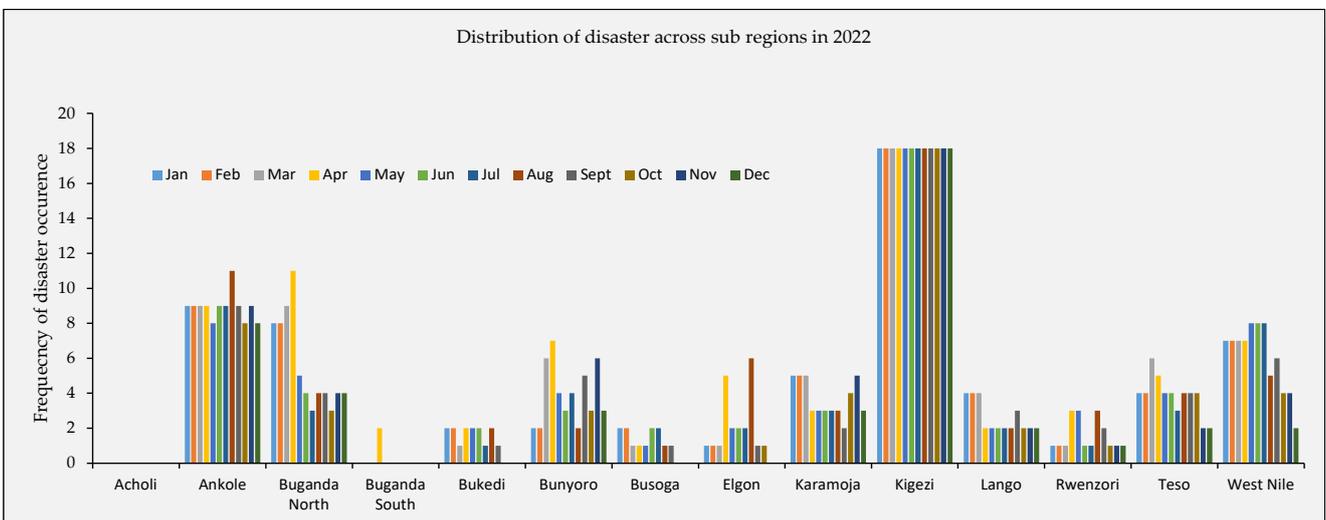


Figure 5. Distribution of Hazard by Month of occurrence and sub region 2022



4.3 Magnitude of Disaster Occurrence

Table 8 presents the magnitude of disaster by hazard types and sub regions based, respectively on the scale of low, moderate, high and severe. It goes on to show that overall in 2021, high magnitude of disasters occurred at 38% as compared to 2022 with high magnitude 31%, this shows a reduction in high magnitude of occurrence of 7 percent between 2021 and 2022. Specific magnitude of occurrence by hazard type further shows that the major cause of high magnitude in 2021 was landslide (50%) followed by prolonged drought (47%), floods (46%) and epidemic (42 percent). Whereas 2022, prolonged drought (44%) and floods (32%) had a high magnitude. Regional distribution of disaster magnitude in 2021 shows that the highest magnitude occurred in Elgon sub region (67%), followed by Karamoja (60%), Buganda South (56%) and Ankole (47%).

The high magnitude of disasters was suffered in Elgon followed by Karamoja, Buganda South and Rwenzori Sub regions, for the year 2021 as indicated in Figure 6 below. Further, the most severe magnitude of disasters occurred in Busoga and Teso sub regions for the year 2021, characterized by drought and floods. Regional distribution of disaster magnitude in 2022 (as indicated in Figure 7) shows Lango sub region with the biggest percentage of severe magnitude (44%), followed by Kigezi (39%) and the least severe magnitude was Teso and West Nile. Most occurrence of high magnitude was in Buganda South (60%) followed by Bukedi (57%) Elgon and Ankole both at (44%). West Nile was observed with the most frequency of moderate magnitude disasters at West Nile (56%), Buganda North (55%), Karamoja (50%). See Figure 6 and Figure 7 for details.

Table 8. Magnitude of Disasters

Type of Disaster	Magnitude (%) of disaster in 2021				Magnitude (%) of disaster in 2022			
	Low	Moderate	High	Severe	Low	Moderate	High	Severe
Floods	3.85	26.92	46.15	23.08	12.00	32.00	32.00	24.00
Drought	15.38	15.38	38.46	30.77	0.00	45.45	9.09	45.45
Prolonged Dry Spells	11.76	35.29	47.06	5.88	12.00	32.00	44.00	12.00
Landslides	12.50	25.00	50.00	12.50	20.00	30.00	20.00	30.00
Hail/Wind Storm	8.33	41.67	41.67	8.33	18.18	30.30	36.36	15.15
Epidemic	14.29	14.29	42.86	28.57	0.00	33.33	66.67	0.00
Lightning	25.00	37.50	25.00	12.50	22.22	22.22	22.22	33.33
Pandemic	10.53	26.32	26.32	36.84	10.00	40.00	30.00	20.00
Earthquake	100.00	0.00	0.00	0.00	0.00	100.00	0.00	0.00
Conflict	38.46	30.77	23.08	7.69	0.00	75.00	12.50	12.50
Pests & Diseases	10.00	35.00	35.00	20.00	9.09	50.00	27.27	13.64
Other	0.00	20.00	60.00	20.00	22.22	44.44	33.33	0.00
Total	22.32	25.24	36.58	15.86	10.95	43.70	28.21	17.13

Figure 6. Magnitude of Disaster by Region in 2021

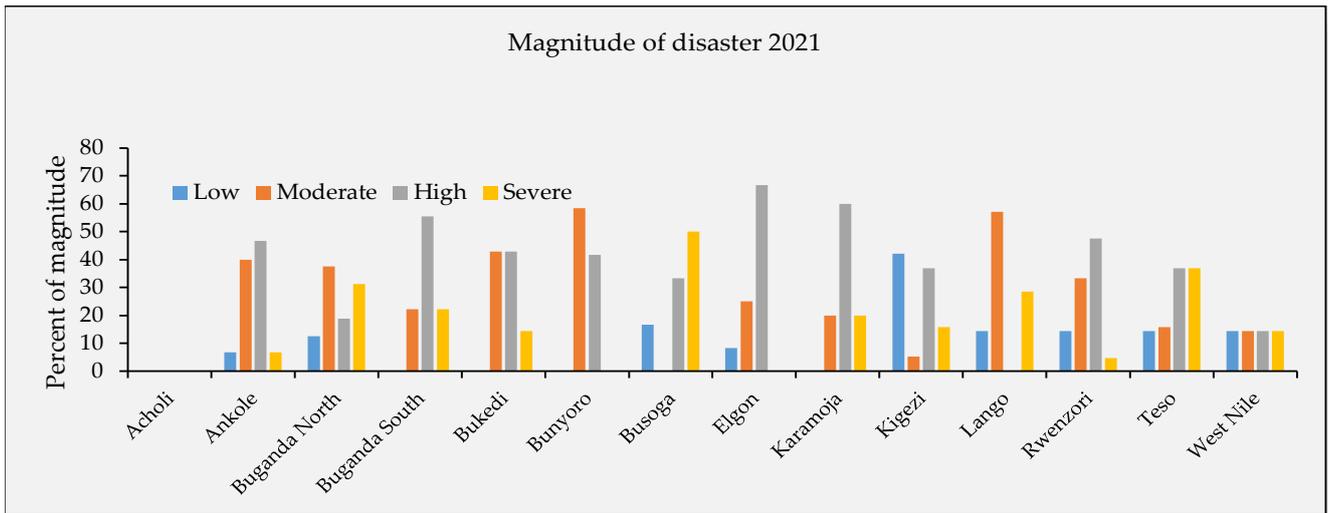
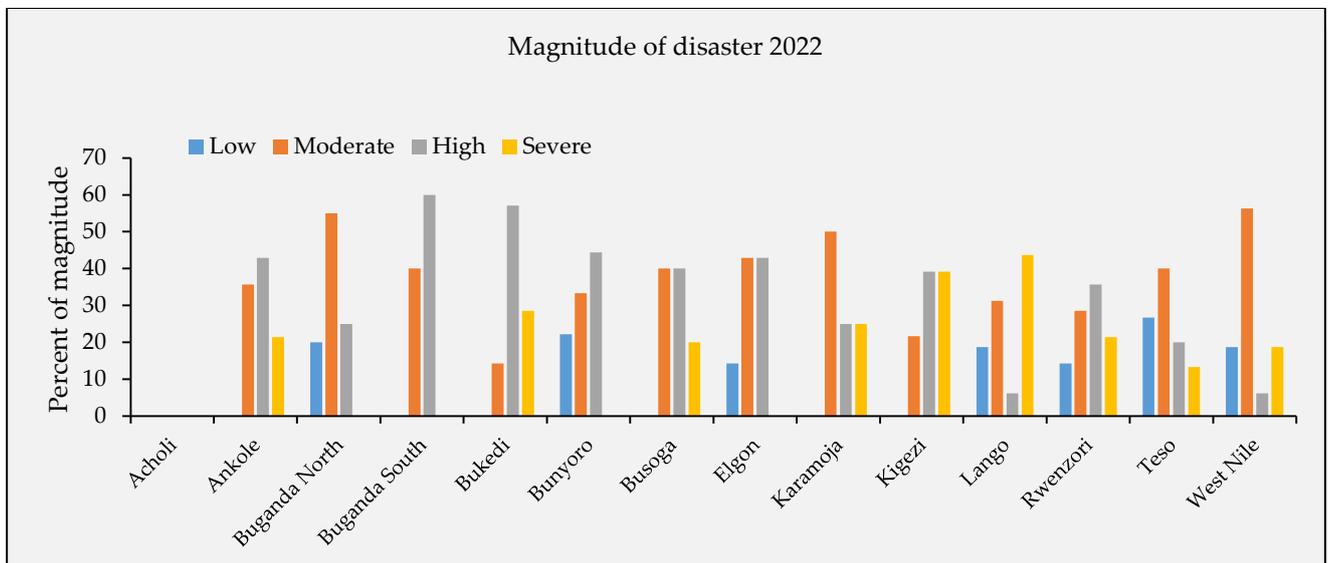


Figure 7. Magnitude of Disaster by Region in 2022



5. IMPACTS OF DISASTERS ON SELECTED SECTORS

5.1 Summary

Hazard occurrence was assessed to determine its impact on selected sectors by region and type. Table 9 shows that the 2021 disasters had the most overall effect on the Agriculture sector (69.57%) followed by Health (39.4%) and Environment (33.7%) with the least affected sector being Energy (13.31%). Specific assessment of hazard impact on selected sectors reveals that whereas agriculture, health and environment were the most affected overall, landslides (100%), prolonged dry spell (100%), drought (100%), flood (96.15%), pests and diseases (95%), impacted significantly on agriculture sector. Pandemic (97.74%), Drought (61.54%) and conflict (58.33%) on health sector while Drought (76.92%), landslides (75%) and prolonged dry spell (70.59%) affected the environment sector significantly. Please see Table 9 for details.

Similarly, in the year 2022, Agriculture sector suffered the greatest effect by disaster in 2022 at (84%), which was consistent with 2021 as the most affected sectors (Table 10). Environment (55%) was the second most affected in 2022 as compared to health sector in 2021 and the least affected sector in 2022 was energy. In addition, conflict, drought, prolonged dry spell and hails storm were the biggest contributors of disaster effects on agriculture. This was also consistent with the main types of disaster effects on agriculture in 2021. Whereas the environment sector was mostly affected by floods (90%) and drought (75%). For details, see Table 10 below.

Regionally, the effect of hazard occurrence on education sector in 2021 was highest in West Nile and Elgon (100%) followed by Lango (92%) then Karamoja (90%) and Busoga (50%) as the least affected sub region. While on agriculture, it was highest (100% of respondents acknowledged) Elgon (through the landslides and floods) and West Nile (through the prolonged drought). In general, all sub regions' agriculture was highly affected by hazards compared to other sectors. Also looking at Health as one of the second most affected sector overall, Buganda South suffered the most effect (100%), followed by Bukedi and West Nile (71%) and Kigezi incurred the least hazard impacts. Education sector suffered the most effect in Buganda South (89%), followed by Bukedi (71%), Karamoja (70%) and the least affected sub region was Ankole. Please see details in Figure 8 below.

The regional effect of hazards in 2022 was highest in Buganda South, Busoga and West Nile at 100 percent on agriculture sector, this was more generally followed by the impact on Environment with the highest in West Nile (88%) and Bukedi (86%). Please see Figure 9 for details

Table 9. Effect of Hazards on Selected Sectors by type of disaster in 2021.

Type of Disaster	Sectors Affected by Disaster																	
	Transport		Housing		Education		Agriculture		Water & Sanitation		Environment		Natural Vegetation		Energy		Health	
	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes
Floods	11.54	88.46	23.08	76.92	38.46	61.54	3.85	96.15	26.92	73.08	42.31	57.69	46.15	53.85	69.23	30.77	46.15	53.85
Drought	84.62	15.38	76.92	23.08	61.54	38.46	0.00	100.00	30.77	69.23	23.08	76.92	15.38	84.62	69.23	30.77	38.46	61.54
Prolonged Dry Spells	82.35	17.65	82.35	17.65	88.24	11.76	0.00	100.00	23.53	76.47	29.41	70.59	23.53	76.47	88.24	11.76	70.59	29.41
Landslides	25.00	75.00	25.00	75.00	62.50	37.50	0.00	100.00	50.00	50.00	25.00	75.00	37.50	62.50	87.50	12.50	62.50	37.50
Hail/Wind Storm	73.91	26.09	39.13	60.87	39.13	60.87	17.39	82.61	73.91	26.09	60.87	39.13	39.13	60.87	82.61	17.39	69.57	30.43
Epidemic	85.71	14.29	71.43	28.57	28.57	71.43	57.14	42.86	100.00	0.00	100.00	0.00	100.00	0.00	85.71	14.29	42.86	57.14
Lightning	100.00	0.00	85.71	14.29	85.71	14.29	57.14	42.86	85.71	14.29	100.00	0.00	100.00	0.00	71.43	28.57	85.71	14.29
Pandemic	47.37	52.63	84.21	15.79	21.05	78.95	68.42	31.58	78.95	21.05	89.47	10.53	94.74	5.26	94.74	5.26	5.26	94.74
Earthquake	100.00	0.00	50.00	50.00	100.00	0.00	50.00	50.00	100.00	0.00	100.00	0.00	100.00	0.00	100.00	0.00	100.00	0.00
Conflict	91.67	8.33	91.67	8.33	58.33	41.67	16.67	83.33	83.33	16.67	66.67	33.33	100.00	0.00	83.33	16.67	41.67	58.33
Pests & Diseases	95.00	5.00	100.00	0.00	90.00	10.00	5.00	95.00	90.00	10.00	65.00	35.00	70.00	30.00	95.00	5.00	65.00	35.00
Other	100.00	0.00	40.00	60.00	100.00	0.00	20.00	80.00	100.00	0.00	60.00	40.00	40.00	60.00	100.00	0.00	60.00	40.00
Total	74.76	25.24	64.13	33.12	59.50	32.81	22.74	69.57	64.86	27.45	58.60	33.71	58.96	33.35	79.00	13.31	52.91	39.40

Table 10. Effect of Hazards on Selected Sectors by type of disaster 2022

Type Of Disaster	Sectors Affected by Disaster																	
	Transport		Housing		Education		Agriculture		Water & Sanitation		Environment		Natural Vegetation		Energy		Health	
	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes
Floods	12.50	87.50	25.00	75.00	58.33	41.67	4.17	95.83	16.67	83.33	25.00	75.00	29.17	70.83	79.17	20.83	62.50	37.50
Drought	81.82	18.18	72.73	27.27	72.73	27.27	0.00	100.00	0.00	100.00	9.09	90.91	18.18	81.82	72.73	27.27	36.36	63.64
Prolonged Dry Spells	87.50	12.50	79.17	20.83	83.33	16.67	12.50	87.50	37.50	62.50	37.50	62.50	29.17	70.83	91.67	8.33	66.67	33.33
Landslides	20.00	80.00	50.00	50.00	60.00	40.00	10.00	90.00	30.00	70.00	50.00	50.00	40.00	60.00	80.00	20.00	70.00	30.00
Hail/Wind Storm	78.13	21.87	50.00	50.00	50.00	50.00	9.38	90.63	65.63	34.38	56.25	43.75	53.13	46.88	84.38	15.63	68.75	31.25
Epidemic	83.33	16.67	66.67	33.33	50.00	50.00	33.33	66.67	83.33	16.67	83.33	16.67	66.67	33.33	100.00	0.00	66.67	33.33
Lightning	100.00	0.00	55.56	44.44	66.67	33.33	77.78	22.22	100.00	0.00	100.00	0.00	100.00	0.00	77.78	22.22	55.56	44.44
Pandemic	70.00	30.00	80.00	20.00	40.00	60.00	60.00	40.00	90.00	10.00	90.00	10.00	100.00	0.00	80.00	20.00	10.00	90.00
Earthquake	0.00	100.00	0.00	100.00	0.00	100.00	100.00	0.00	0.00	100.00	100.00	0.00	100.00	0.00	0.00	100.00	0.00	100.00
Conflict	71.43	28.57	85.71	14.29	85.71	14.29	0.00	100.00	71.43	28.57	57.14	42.86	71.43	28.57	85.71	14.29	71.43	28.57
Pests & Diseases	100.00	0.00	95.45	4.55	90.91	9.09	4.55	95.45	86.36	13.64	68.18	31.82	59.09	40.91	95.45	4.55	77.27	22.73
Other	88.89	11.11	77.78	22.22	88.89	11.11	11.11	88.89	100.00	0.00	44.44	55.56	55.56	44.44	100.00	0.00	55.56	44.44
Total	66.13	33.87	61.51	35.53	57.43	34.88	24.83	67.48	52.38	39.93	55.46	36.85	55.57	36.74	72.84	19.47	49.29	43.02

Figure 8. Effect of Hazards on Selected Sectors by sub region 2021

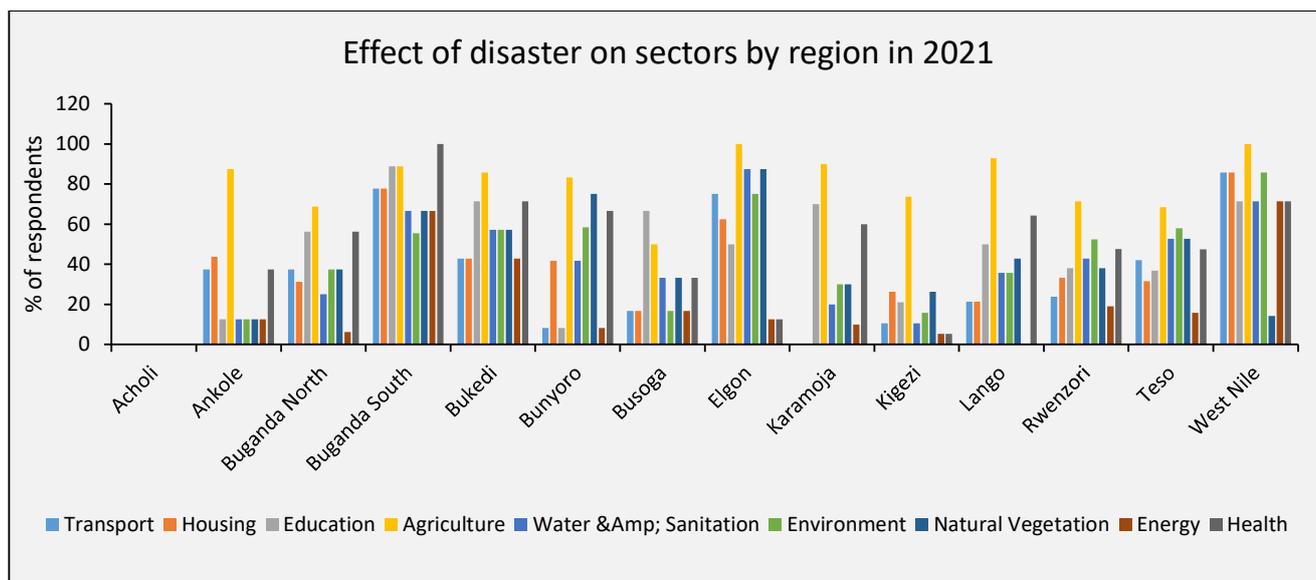
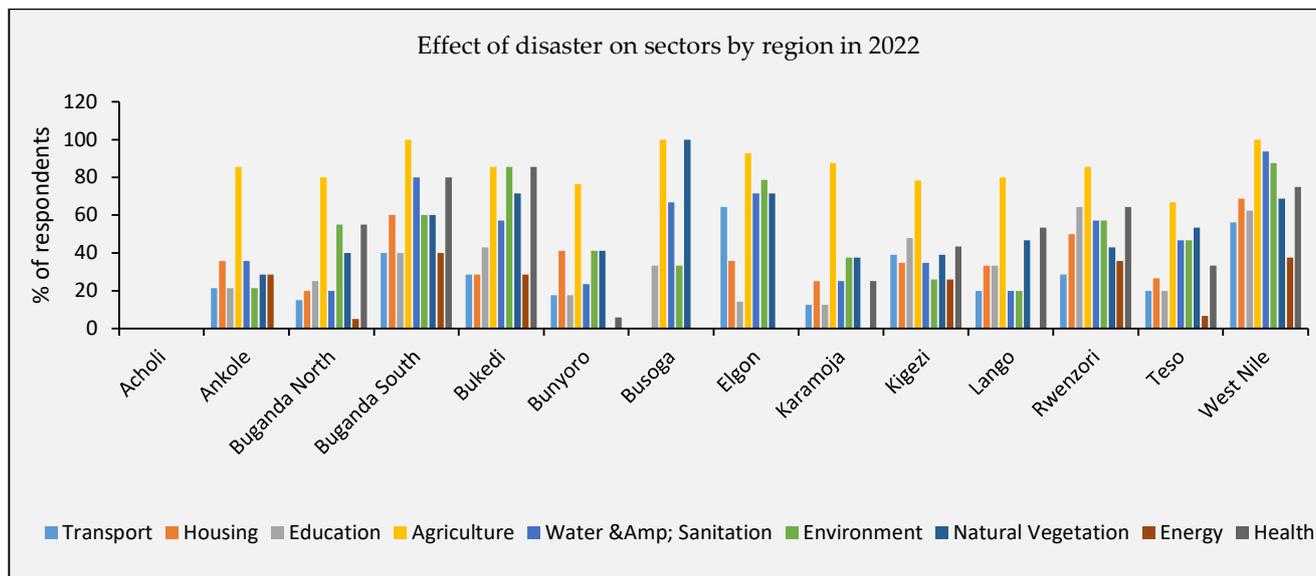


Figure 9. Effect of Hazards on Selected Sectors by Sub region 2022



5.2 Impact of Hazards on Population

This subsection compares the demographic effects of hazards on households, people, children, males, female and PWDs. The disasters were categorized as injured, displaced, died and those that disappeared/missing due to occurrence of disasters between 2021 and 2022.

5.2.1 Magnitude of hazard impacts across the different populations

Table 11 below shows in detail the magnitude of disaster on the population;

Affected population:

There was an increase of 29,448 affected households from 2021 to 2022. The increase in number affected was consistent across people, PWDs and children who were specifically affected with an observed increase of 811,110.

Displaced population:

The number of displaced households increased by 176,932, displaced children increased to 27,990 and PWDs also increased from 31 to 581 between 2021 and 2022. Children were highly affected due to difficulty in escaping to safer areas and water borne diseases

Dead population:

Overall, 1,483 households lost at least a member of the family in 2021, this number was less with 1,134 households in 2022, indicating a significant reduction by disaster, dead people also reduced from 7,416 to 5,670 and the reduction could be attributed to the decline in COVID19.

Table 11. Comparison of Effects of Hazards by Selected impacts and Category between 2021 and 2022

Type of Impacts	Households		People		Children		Males		Females		PWDS	
	2021	2022	2021	2022	2021	2022	2021	2022	2021	2022	2021	2022
Affected	1,445,690	1,417,172	7,136,054	7,402,812	570,585	1,222,127	3,387,249	2,946,200	3,552,253	2,969,822	40,621	45,837
Injured	306,083	267,226	1,380,827	806,856	54,057	38,611	687,682	503,435	688,230	488,747	2,002	278
Displaced	37,243	213,975	167,263	368,542	8,944	36,934	81,368	180,629	85,819	176,554	31	581
Dead	1,483	1,134	7,416	5,670	8	24	3,371	2,571	4,045	3,099	0	0

5.2.2 Impacts of hazards across different categories of people

Accordingly, Table 12 shows the highly affected category with adult males and females followed by the children, PWDs. All the categories of people were significantly affected by the pandemic (COVID19), prolonged dry spells which affected different sectors including agriculture, health, water among others; and then drought and floods. The highest impact was experienced in the year 2022.

Table 13 shows the magnitude of different hazards in causing displacement of communities. Accordingly, floods had the highest impact for all categories of people including the children, PWDs, males and females. However, the impact was highest in the year 2021, where over 70,000 males and females were displaced from their households to other places. The number of males and females displaced in the year 2021 were 47591 males and 46354 females higher than in 2022 – females being the highest being displaced overall by 0.04% in 2021 and 7.3% in 2022. The children displaced were higher in 2022 (19,250 children) compared to the 6,144 children i.e. 213% increase in 2022. Drought was the second disastrous climate hazard followed by landslides whose males were the highest victims being displaced by this hazard. Pests and diseases also had a significant impact on the males and females in the year 2022.

The number of people/households and other categories injured during the occurrence of different hazards are shown in Table 14. Based on the results, the pandemic caused more injuries to the households, people, males and females followed by prolonged dry spells and drought, floods and pests and diseases. The males were highly injured by the pandemic (2.8% higher than in females). The females were highly injured by prolonged dry spells than males by 2% in 2021 and decreased in 2022 by 5.4%. Generally, the hazards injured more females than males and the impact on children and PWDs was lower than the adult males and females.

Table 15 shows the number of people who lost their lives due to hazards. Accordingly, the number of deaths due to different hazards were higher in 2021. Traffic accidents on road resulted into higher people being killed (4,159 people); followed by public health emergencies such as COVID19 (3,029 people), drowning (89 people) and deaths due to cattle rustling (35 people).

Table 12. Affected Categories of people by hazards

Type of Hazard	Households		People		Children		Adult Males		Adult Females		PWDs	
	2021	2022	2021	2022	2021	2022	2021	2022	2021	2022	2021	2022
Floods	133,646	113,507	686,883	539,977	61,664	68,130	339,951	269,749	350,608	270,088	1,987	3,244
Drought	303,772	340,440	1,640,487	1,200,796	205,484	130,300	777,481	573,723	841,507	616,928	58	1,145
Prolonged dry spells	372,894	481,070	1,603,052	2,313,448	85,889	323,432	836,261	1,088,745	901,910	1,088,277	70	1,300
Landslides	1,522	23,576	7,724	66,328	3,030	28,623	3,691	25,804	4,031	29,731	33	158
Hail/Wind storm	65,050	65,175	127,887	164,458	525	9,509	54,367	78,917	62,208	82,833	19	813
Epidemic	1	14,018	1	76,001	0	441,040	1	39,401	0	36,600	0	0
Lightning	6	10	25	295	1	46	9	111	16	183	0	0
Pandemic	472,997	214,291	2,383,375	2,315,427	213,992	213,884	1,026,900	507,610	1,054,167	482,842	38,454	38,644
Conflict	13,326	19,881	520	94,144	0	6,720	144	47,434	150	46,710	0	393
Pests & Diseases	82,476	145,204	686,100	630,938	0	443	348,444	314,706	337,656	315,630	0	140

Table 13. Displaced category

Type of Hazard	Households		People		Children		Males		Females		PWDs	
	2021	2022	2021	2022	2021	2022	2021	2022	2021	2022	2021	2022
Floods	31,623	16,656	141,771	46,465	6,144	19,250	70,211	22,260	70,237	23,883	11	392
Drought	4,346	37,800	21,730	37,800	0	0	8,692	15,800	13,038	12,020	0	0
Prolonged dry spells	9	41,721	54	41,721	0	0	0	20,195	0	20,526	0	0
Landslides	1,034	76,710	2,322	26,441	2,800	17,375	2,436	12,839	2,513	13,599	20	182
Hail/Wind storm	221	88	1,326	615	0	309	0	235	0	326	0	7
Conflict	10	0	60	0	0	0	29	0	31	0	0	0
Pests & Diseases	0	41,000	0	215,500	0	0	0	109,300	0	106,200	0	0

Table 14. Injured category

Type of Hazard	Households		People		Children		Males		Females		PWDs	
	2021	2022	2021	2022	2021	2022	2021	2022	2021	2022	2021	2022
Floods	16,835	14,724	41,650	33,402	7	16,672	21,922	16,059	19,728	17,343	2	140
Drought	138,048	78,800	903,100	59,300	47,540	2,500	447,100	125,100	456,000	118,220	1,000	0
Prolonged dry spells	41,000	82,721	215,500	257,221	6,500	2,500	109,300	129,495	106,200	126,726	1,000	0
Landslides	84	4,859	98	24,404	10	16,688	41	11,866	57	12,544	0	138
Hail/Wind storm	3,782	4,962	4,915	211	0	4	0	1,102	0	909	0	0
Lightning	1	10	1	18	0	37	0	13	1	5	0	0
Pandemic	106,318	41,000	215,500	215,500	0	110	109,300	109,300	106,200	106,200	0	0
Earthquake	15	0	56	0	0	0	12	0	44	0	0	0
Conflict	0	150	7	1,800	0	100	7	1,200	0	600	0	0
Pests & Diseases	0	40,000	0	215,000	0	0	0	109,300	0	106,200	0	0

Table 15. Deaths due to Hazards Category

Type of Hazards	People	
	2021	2022
Accidents	4,159	4,534
Arson	25	14
Building Collapse	20	38
Cattle rustling	35	393
Drowning	89	113
Electrocution	7	16
Explosives	12	5
Fires	19	66
PHEs (Pandemics and Epidemics)	3,029	434
Landslides	11	11
Floods	0	27
Lightning	10	19

5.3 Impact of Hazards on the Agriculture sector

This section explores the impact of hazard occurrence to the agriculture sector across selected categories of crops including root crops, cash crops, vegetables, fruits and oil crops among others. The impact is assessed on the hectares of crops affected and estimated loss in Uganda shillings by category of crops and compares sub regional impact for 2021 and 2022.

5.3.1 Impact of Hazard to the type of crop by extent of damage (area and estimated loss)

Table 16 shows that nationally, the 2022 hazards led to an estimated negative increase of 1,934,245 hectares up from 1,671,009 hectares of agriculture crop land in 2021 (i.e. 1.16 times higher than in 2021), this translated to an estimated loss of 23.9 billion Uganda shillings in 2022 up from 17.9 billion Uganda shillings in 2021 (i.e. 33.7% increase in 2022). The assessment further reveals an increase in the hazard impact on hectares damaged and estimated economic loss across all selected crops between 2021 and 2022 except for coffee, passion fruits, sorghum, bananas and groundnuts that suffered a slight decrease of affected crop area. Cassava, coffee and groundnuts experienced the highest economic losses in 2021 while in 2022, it was sweet potatoes, rice and bananas which were mostly affected.

Regionally, in the year 2021, maize had the highest acreage affected and this was mainly in Lango (93,201 acres) and Bunyoro (89,640 acres). However, the highest estimated economic loss was experienced in Teso sub region with a loss of 5 billion Uganda shillings and 4 billion Uganda shillings under cassava and Groundnuts, respectively, followed by Kigezi sub region with 4.7 billion Uganda shillings for coffee. See Annex 1 for details. In the year 2022, Sweet potatoes highest losses in terms of area in Rwenzori (136,000 acres) followed by Lango (87,527 acres), Teso (17,868 acres) among others. While economically, the highest loss for Sweet potatoes was experienced in Busoga with 13 billion Uganda shillings from 51,152 acres. For details of other crops, see Annex 2.

Table 16. Impact of Hazards to the type of crop by extent of damage (by area and estimated loss) by Year of Occurrence

Category/ Crop	2021		2022	
	Hectares of Crop affected	Estimated economic Loss (UGX)	Hectares of Crop affected	Estimated economic Loss (UGX)
Root Crops				
Cassava	160,972	5,300,000,000	249,189	263,000,000
Irish Potatoes	7,869	25,900,000	16,000	15,300,000
Sweet Potatoes	174,884	78,400,000	136,000	13,300,000,000
Cereals				
Rice	68,909	82,700,000	78,263	5,370,000,000
Sorghum	148,402	99,200,000	142,177	102,000,000
Maize	304,255	2,320,000,000	550,381	220,000,000
Cash Crops				
Coffee	153,058	4,770,000,000	139,609	1,350,000,000
Cotton	153,875	154,000,000	125,000	155,000,000
Vegetables & Fruits				
Pineapple	2,175	310,000,000	62,286	313,000,000
Passion fruits	12,656	3,120,000	7,321	26,400,000
Bananas	176,118	530,000,000	123,213	1,560,000,000
Beans	168,861	97,000,000	191,687	268,000,000
Oil Crops				
Groundnuts	126,481	4,110,000,000	109,487	132,000,000
Macadamia	0	0	333	500,000
Others				
Total	12,494	17,700,000	3,299	861,000,000
	1,671,009	17,898,020,000	1,934,245	23,936,200,000



Photo: Rotting cassava in Acinga sub county (left) and water melons destroyed by hailstorms in Alito sub county (right) in Kapelebyong district in 2021

5.3.2 Impact of hazard by type of crop and extent of damage (by area and estimated loss), in 2021 and 2022

Floods, Drought, prolonged dry spell, hailstorm, pests and diseases had the greatest impact on agriculture sector. Generally, root crops had the highest economic losses of 10.1 billion Uganda shillings from an area of 470,186 acres in the year 2021 among other crop types. Specifically, this was mainly attributed to prolonged dry spells which resulted into 332,228 acres translating into 9.3 billion Uganda shillings loss. For details on other crop types, see Table 17 below. Similarly, in the year 2022, root crops had the highest economic loss of 14 billion Uganda shillings covering 104 million acres among other crop types. Specifically, this was mainly attributed to prolonged dry spells which affected 103,000,000 acres translating into 13.4 billion Uganda shillings loss. For details on other crop types, see Table 18 below

Furthermore, prolonged dry spell had the biggest overall negative impact across all crop categories compared to other types of disasters in both 2021 and 2022. In 2021, after prolonged dry spells, landslides caused the second highest economic loss mostly on root crops and cereals. Outside of the natural hazards, Pests and diseases majorly impacted on cash crops with an estimated economic loss of 154,000,000 Uganda Shillings. In 2022, drought followed by pests and diseases that attacked both crops and livestock caused the second and third most economic losses at 8,614,300,000 and 3,142,000,000 Uganda shillings respectively. Overall 2022 (UGX36,305,150,000) registered more economic losses compared to 2021 (UGX22,280,822,000). See Tables 17 and 18 for details.



Photo: Banana plantation affected by Hailstorms in Kashari Sub County; Mbarara during the year 2022



Photo: Farmer reflecting on damage to banana plantation by hailstorm in South Western Uganda.

Table 17. Impact of Type of hazard by type of crop and extent of damage (by area and estimated loss) by extent of Damage, in 2021

Type of Hazard	Root Crops		Cereals		Cash Crops		Vegetables		Oil Crops	
	Area (acre)	Estimated Loss (Ugx)	Area (acre)	Estimated Loss (Ugx)	Area (acre)	Estimated Loss (Ugx)	Area (acre)	Estimated Loss (Ugx)	Area (acre)	Estimated Loss (Ugx)
Floods	63,463	60,300,000	111,686	16,900,000	2,012	2,300,000	7,026	73,300,000	13,467	14,400,000
Drought	60,831	99,500,000	98,124	190,000,000	35,772	19,300,000	174	502,000	35,359	68,200,000
Prolonged Dry Spells	332,228	9,320,000,000	301,852	2,270,000,000	213,248	4,740,000,000	6,932	311,000,000	76,386	4,020,000,000
Landslides	206	643,000,000	169	187,000,000	11	32,200,000	32	5,680,000	20	5,000,000
Hail/Wind Storm	8,648	26,400,000	4,983	18,300,000	1,221	4,880,000	211	1,120,000	1,094	12,600,000
Conflict	75	29,700,000	519	144,000,000	0	0	0	0	0	0
Pests & Diseases	4,735	17,900,000	4,223	4,940,000	54,669	154,000,000	457	65,000,000	155	34,400,000
Total	470,186	10,196,800,000	521,556	2,831,140,000	306,933	4,952,680,000	14,832	145,602,000	126,481	4,154,600,000

Table 18. Impact of Type of hazard by type of crop by extent of damage (by area and estimated loss) by extent of Damage, in 2022

Type of Hazard	Root Crops		Cereals		Cash Crops		Vegetables		Oil Crops	
	Area (acre)	Estimated Loss (Ugx)	Area (acre)	Estimated Loss (Ugx)	Area (acre)	Estimated Loss (Ugx)	Area (acre)	Estimated Loss (Ugx)	Area (acre)	Estimated Loss (Ugx)
Floods	21,433	35,100,000	91,516	1,320,000,000	271	5,010,000	86	13,800,000	6,815	82,200,000
Drought	80,910	135,000,000	5,376	8,040,000,000	2,479	22,000,000	37	10,300,000	10,795	407,000,000
Prolonged Dry Spells	103,000,000	13,400,000,000	326,988	5,460,000,000	73,051	1,290,000,000	314	25,800,000	79,441	763,000,000
Landslides	217	69,900,000	67	7,440,000	349	314,000,000	9	46,500,000	0	0
Hail/Wind Storm	1,640,000	13,300,000	34,021	8,280,000	125,000,000	601,000,000	480	38,500,000	1,497	48,200,000
Epidemic	1,322	107,000,000	4,050	8,520,000	0	0	0	0	245	16,500,000
Conflict	20	8,000,000	60	1,800,000	0	0	0	0	0	0
Pests & Diseases	206,031	85,000,000	308,192	130,000,000	234,791	2,030,000,000	68,682	331,000,000	10,683	566,000,000
Other	210	349,000,000	531	183,000,000	55	309,000,000	0	0	12	24,000,000
Total	104,950,143	14,202,300,000	770,801	15,159,040,000	125,310,996	4,571,010,000	69,608	465,900,000	109,488	1,906,900,000

5.3.3 Impact of hazards on livestock by year of occurrence during the disaster

Selected livestock including cows, goats, sheep and poultry were assessed to establish the distribution of disaster impact and estimated loss in 2021 and 2022. The overall loss in the number of listed animals was 377,841, this was similar to 2022 (Table 19). In terms of numbers of livestock lost, poultry had the highest (286,932 birds) followed by goats (52,902). However, the greatest economic loss was experienced under cattle with an estimated loss of 19.4 billion Uganda shillings.

Table 20 below shows the regional distribution of the impact of hazards on livestock. The highest heads of cattle lost were in Busoga (6,380 heads) followed by Bunyoro (6,148 heads) although with regard to economic loss, Ankole experienced the highest economic loss of 4 billion Uganda shillings. For the goats, the highest number lost was in Busoga sub region (12,765 goats) translating into 53 million Uganda shillings. The highest number of poultry lost was recorded in Buganda south with 159,000 birds translating into an economic loss of 2 billion Uganda shillings. In addition, ponds were destroyed in the highest number of ponds destroyed (244 ponds was recorded in Lango sub region, translating into an economic loss of 1.7 billion Uganda shillings.

Table 19. Distribution of Impact of hazard by type of Animal by year of occurrence during the disaster

Type of Livestock	2021		2022	
	Number Lost	Estimated Loss (Ugx)	Number Lost	Estimated Loss (Ugx)
Cattle	29,165	19,386,700,000	29,165	19,386,700,000
Goats	52,902	2,847,600,000	52,902	2,847,600,000
Sheep	8,842	1,435,072,145	8,842	1,435,072,145
Poultry	286,932	3,999,675,000	286,932	3,999,675,000
Others	8,219	2,791,100,000	8,219	2,791,100,000
Ponds destroyed	1,063	4,794,800,000	1,063	4,794,800,000
Total		57,566,869,145		57,566,869,145

*****Data for livestock damages and ponds destroyed in 2022 was not readily available at the time of data collection.**

Table 20. Regional Distribution of Impact of hazard by type of Animal per 2021

Sub Region	Cattle		Goats		Sheep		Poultry		Others		Ponds destroyed	
	Number Lost	Estimated Loss (Ugx)	Number Lost	Estimated Loss(Ugx)	Number Lost	Estimated Loss (Ugx)	Number Lost	Estimated Loss (Ugx)	Number Lost	Estimated Loss (Ugx)	Number Destroyed	Estimated Loss (Ugx)
Acholi	110	132,000,000	96	14,400,000	48	9,600,000	4,200	105,000,000	200	60,000,000	28	280,000,000
Ankole	2,051	4,060,000,000	28,458	625,000,000	1,232	210,000,000	1,700	34,000,000	700	161,000,000	10	10,000,000
Buganda North	2,089	2,510,000,000	-	-	-	-	-	-	-	-	-	-
Buganda South	480	1,040,000,000	830	166,000,000	95	19,000,000	159,000	2,090,000,000	2,008	562,000,000	30	114,000,000
Bukedi	204	204,000,000	224	56,000,000	171	34,200,000	6,077	182,000,000	92	27,600,000	33	34,800,000
Bunyoro	6,148	697,000,000	45	11,300,000	-	-	22,226	418,000,000	0	0	205	50,000,000
Busega	6,380	180,000,000	12,765	53,000,000	127	22,700,000	3,200	48,000,000	0	0	19	80,500,000
Elgon	45	41,700,000	92	15,300,000	42	8,000,000	328	6,875,000	20	200,000	9	17,500,000
Karamoja	3,700	3,200,000,000	2,730	247,000,000	1,600	160,000,000	1,660	40,000,000	50	17,500,000	21	186,000,000
Kigezi	480	535,000,000	1,345	330,000,000	1,144	635,000,000	5,160	116,000,000	3,590	1,690,000,000	106	708,000,000
Lango	1,178	1,300,000,000	1,050	98,000,000	866	101,000,000	77,802	680,000,000	1,352	221,000,000	244	1,760,000,000
Rwenzori	1,197	1,750,000,000	423	672,000,000	0	12,145	927	193,000,000	0	0	46	371,000,000
Teso	4,673	3,310,000,000	4,701	541,000,000	3,505	234,000,000	2,045	30,700,000	178	35,600,000	263	933,000,000
West Nile	430	427,000,000	143	18,600,000	12	1,560,000	2,607	56,100,000	29	16,200,000	49	250,000,000
Total	29,165	19,386,700,000	52,902	2,847,600,000	8,842	1,435,072,145	286,932	3,999,675,000	8,219	2,791,100,000	1,063	4,794,800,000

5.4 Impact of Hazards on the Housing Infrastructure

The 2021–2022 ASDR assessed the impact of hazards by type of infrastructure damage and estimated loss, disaggregated by sub region and hazard types. These findings contribute to the need for disaster/ climate proofed housing plans and the need for technical support supervision of housing infrastructure in Uganda.

5.4.1 Extent of Damage by type of destruction per year

Table 21 shows the most common disasters were cracking of houses in 2021 and 2022 (1,846 and 1,542 respectively), contributing to an estimated loss of 7,824,500,000 and 7,692,800,000 shillings in 2021 and 2022, respectively. There was however, a decrease in the number of buildings with cracks and the corresponding losses between 2021 and 2022 (as shown in Table 21). The second largest category of infrastructure damage was completely destroyed houses, which showed a significant increase (from 635 to 932) between 2021 and 2022 with estimated losses of 5,157,000,000 in 2021; increasing to 7,589,000,000 shillings in 2022. This was followed by house damages related to rooftop destruction and house siltation. The damages for all these and the corresponding losses decreased in 2022 except for completely destroyed structures, which increased from 635 to 932 structures.

Table 21. The Extent of Damage by type of destruction per year

Type of destruction	2021		2022	
	Number	Estimated loss in Ugx	Number	Estimated loss in Ugx
Cracked	1,846	7,824,500,000	1,542	7,695,300,000
Roof off	612	6,477,663,000	945	5,499,663,000
Silted	452	2,584,460,000	607	1,623,900,000
Completely destroyed	635	5,162,500,000	932	7,584,000,000
Total	3,545	22,049,123,000	4,026	22,402,863,000

5.4.2 Extent of Damage by type of destruction per year by type of disaster per year

For housing infrastructure damage by type of hazard (Table 22), floods and hail/wind storms contributed more to house cracking, house roof removal, silting, and complete house destruction in 2021. These two disaster categories also dominated in 2022, except that hail/wind storms damaged more (512) house roofs than floods in 2022. Landslides were also significant in cracking and completely destroying houses in both 2021 and 2022.

Tremors (Earthquakes) cracked 32 and 37 buildings in 2021 and 2022, respectively. Lightning contributed to damages to 8 houses in 2021. The number of houses with damages from lightening increased to 14 in 2022 with 2 and 4 cases of total destruction of houses in 2021 and 2022, respectively. Conflicts contributed to four (4) complete house destructions in 2021 and also in 2022.

In general, floods caused the biggest damage across the housing infrastructure, with the most dominant damage being cracked houses in both 2021 and 2022. The damage on roofs reduced, while completely destroyed buildings increased between 2021 and 2022. The number of houses affected by hailstorm also remained high across the different categories of infrastructure.

Table 22. Extent of Damage by type of destruction per year by type of disaster per year

Type of Hazard that occurred	Cracked walls		Roof off		Silted		Completely destroyed	
	2021	2022	2021	2022	2021	2022	2021	2022
Floods	1,376	958	361	248	410	455	344	762
Landslides	140	110	-	10	-	45	31	41
Hail/Wind Storm	288	229	216	512	40	65	193	113
Lightning	8	14	-	-	-	-	2	4
Tremors (Earthquake)	32	37	-	-	-	-	-	-
Conflict	-	-	-	-	-	-	4	4
Others	-	-	-	-	-	40	60	8



Photo: Floods in Mbale City from River Nabuyonga in the Elgon Sub region during August 2022.

5.4.3 Extent of damage by type of disaster by region to Housing infrastructure per region

Regional damage by infrastructure assessment shows that Rwenzori sub region suffered the biggest housing infrastructure damages and losses due to completely destroyed houses (UGX 3,234,500,000), and cracked walls (UGX 2,925,500,000), followed by West Nile sub region with the biggest estimated economic loss (UGX 1,785,000,000) from houses whose roofs were blown off and (UGX 1,295,000,000) from houses with cracked walls in 2021 (as shown in Table 23). However, with regard to the number of damages, Kigezi had the highest number of housing infrastructure with cracks and roofs blown off followed by Rwenzori for the year 2021. In 2022, Lango sub region suffered the most disaster losses from houses with cracked walls (756), with an estimated loss of UGX 2,846,000,000, followed by completely destroyed houses (390) with an estimated loss of UGX 2,002,000,000 (Table 24).

In summary from 2021 to 2022, the housing infrastructure which cracked reduced by 16%, while roofs blown off increased by 54%. Additionally, housing infrastructure which was completely destroyed increased by 46.7%.

Table 23. Extent of disaster damage by Region to Housing infrastructure per region 2021

Sub Region	Cracked walls	Estimated Loss (Ugx)	Roof Off	Estimated Loss (Ugx)	Silted	Estimated Loss (Ugx)	Completely Destroyed	Estimated Loss (Ugx)
Acholi	92	207,000,000	16	72,000,000	8	24,000,000	24	108,000,000
Ankole	1	-	5	610,000,000	-	-	2	400,000,000
Buganda North	2	1,000,000,000	-	-	146	256,000,000	-	-
Buganda South	56	262,000,000	49	326,500,000	1	700,000	125	475,000,000
Bukedi	39	118,000,000	37	180,000,000	-	-	25	45,000,000
Bunyoro	-	-	1	-	-	-	-	-
Busoga	120	840,000,000	12	326,000,000	-	-	4	45,000,000
Elgon	5	26,000,000	-	-	-	-	-	-
Karamoja	-	-	-	-	-	-	100	80,000,000
Kigezi	1,000	-	300	1,500,000	50	500,000,000	40	470,000,000
Lango	-	-	10	600,000,000	-	-	1	40,000,000
Rwenzori	458	2,925,500,000	135	1,517,663,000	100	730,660,000	100	3,234,500,000
Teso	36	1,151,000,000	39	1,059,000,000	93	1,065,000,000	4	160,000,000
West Nile	37	1,295,000,000	8	1,785,000,000	54	8,100,000	210	105,000,000
Total	1,846	7,824,500,000	612	6,477,663,000	452	2,584,460,000	635	5,162,500,000

Table 24. Extent of damage by type of disaster by Region to Housing infrastructure per region 2022.

Sub Region	Cracked	Estimated Loss (Ugx)	Roof Off	Estimated Loss (Ugx)	Silted	Estimated Loss (Ugx)	Completely Destroyed	Estimated Loss (Ugx)
Acholi	92	207,000,000	16	72,000,000	8	24,000,000	24	108,000,000
Ankole	8	160,000,000	-	-	-	-	8	1,000,000,000
Buganda North	10	-	172	340,000,000	-	-	1	25,000,000
Buganda South	118	272,000,000	120	340,000,000	10	20,000,000	34	995,000,000
Bukedi	13	7,800,000	12	16,000,000	-	-	-	-
Bunyoro	-	-	-	-	-	-	-	-
Busoga	4	280,000,000	5	20,000,000	-	-	3	30,000,000
Elgon	53	-	-	-	-	-	-	-
Karamoja	-	-	-	-	-	-	-	-
Kigezi	108	300,000,000	150	370,000,000	90	280,000,000	60	610,000,000
Lango	756	2,846,000,000	275	2,163,000,000	210	488,000,000	390	2,002,000,000
Rwenzori	321	1,585,000,000	151	1,678,663,000	115	802,600,000	198	2,554,000,000
Teso	22	742,500,000	42	500,000,000	120	1,200,000	3	120,000,000
West Nile	37	1,295,000,000	2	-	54	8,100,000	211	140,000,000
Total	1,542	7,695,300,000	945	5,499,663,000	607	1,623,900,000	932	7,584,000,000



Photo: Water submerged house in Acowa sub county (left) and waterlogged one in Obalanga sub county (right) in Kapelebyong district in 2021



Photo: A collapsed house in Acowa sub county



Photo: A completely waterlogged house in Acinga sub county (right) in Kapelebyong district in 2021

5.5 Impact of Hazards on the Water and Sanitation Sector

Access to safe water, sanitation and hygiene is the most basic human need for health and well-being. It's critical to measure and report on any impact that affects the level of access and use of water to the population. The assessment estimated the state of damage and associated cost of loss to the water and sanitation sector, that is, on gravity flow schemes, public water standpipes, wells/springs, boreholes and latrines/sanitation facilities.

Comparisons on the extent of damage was made at sub regional level for 2021 and 2022. The findings will facilitate planning to strengthen resilience of already constructed water and sanitation infrastructure, as well as rehabilitation of damaged water sources to restore access to safe water and sanitation services. Further, regional distribution of the extent of damage is presented for 2021 and 2022.

5.5.1. Types of hazards that affected the Water and Sanitation Sector in 2021 and 2022

During the year 2021 and 2022 ASDR, it was observed that a total of 10,067 water sources were damaged. The findings show the highest proportion of hazard impacts on the Water and Sanitation sector was floods accounting for 70.8 percent followed by prolonged dry spell with 16.9 percent (Table 25). The report also makes a year on year comparison to establish the extent of damage to water schemes by type of hazard. The findings showed that there was a reduction in number of water sources destroyed (26.1 percent) between 2021 (5,791) to 2022 (4,276) as shown in table 25 below.

Table 25. Number of Water Sources destroyed by type of Hazard in 2021 and 2022.

Type of Hazard that occurred	2021	2022	Total	Proportional Change (%)	% Change in the impacts between 2021 and 2022
Floods	4,686	2,445	7,131	70.81	-47.8
Prolonged dry spells	716	985	1,701	16.89	37.6
Landslides	18	455	473	4.70	2427.8
Conflict	65	323	388	3.85	396.9
Hail/Wind storm	20	42	62	0.62	110.0
Drought	286	26	312	3.10	-90.9
Total	5,791	4,276	10,067	100	-26.1

Data collected examined the extent of damage caused by type of hazard to four of the identified types of water schemes (Table 26). In 2021, the findings show that flooding was the major contributor of damages to almost all schemes accounting for nearly 49 percent followed by Prolonged dry spell with 36 percent while drought was the third with 11.8 percent. Further analysis by scheme, showed that Public Water Stand pipes were the highest scheme with 35.5 percent followed by well spring with nearly 35.35 percent as shown in Table 26 below.

Table 26. Extent of damage to the Water and Sanitation Sector by type of water scheme in 2021

Type of Hazard that occurred	Gravity Flow Schemes	Public Water Stands	Wells Springs	Boreholes	Total	Proportion	Latrines Sanitation Facilities
Floods	9	429	244	282	964	48.61%	3,715
Prolonged dry spells	10	213	433	58	714	36%	2
Drought	2	12	19	201	234	11.80%	52
Conflict	1	48	-	6	55	3%	10
Hail/Wind storm	-	2	-	4	6	0.30%	14
Landslides	5	-	5	-	10	1%	8
Total	27	704	701	551	1,983	100.00%	3,801
Percentage Contribution	1.36%	35.50%	35.35%	27.79%	100%		

The assessment for 2022 (Table 27), showed that the highest proportion of type of disaster affecting the water schemes was due to prolonged dry spell accounting for 52.29 percent followed by Floods with 24 percent. Further analysis by type of Water scheme showed that the highest scheme affected were Well Springs accounting for 49.52 percent followed by Public Water Stands with 25 percent as shown in table 27 below.

Table 27. Extent of damage to the Water and Sanitation Sector by type of water scheme in 2022

Type of Hazard that occurred	Gravity Flow Schemes	Public Water Stands	Wells Springs	Boreholes	Total	Proportion	Latrines Sanitation Facilities
Prolonged dry spells	6	94	688	195	983	52.29%	2
Floods	22	52	208	171	453	24%	1,992
Landslides	14	300	23	0	337	17.93%	118
Conflict	0	0	0	60	60	3%	263
Drought	2	12	4	8	26	1.38%	0
Hail/Wind storm	0	8	8	1	17	1%	25
Other	0	4	0	0	4	0.21%	0
Total	44	470	931	435	1,880	100.00%	2,400
Percentage Contribution	2.34%	25.00%	49.52%	23.14%	100%		



Photo: Borehole water sources affected by floods

5.5.2 Extent of Damage by type of destruction per year

In 2021, hazards destroyed a total of 551 boreholes with an estimated loss worth 6,855,000,000 Uganda shillings that was the highest of the four water schemes under consideration despite more unit damages of public water standpipes. This was the highest economic loss in the water and sanitation sector, followed by gravity flow schemes (27 schemes) with an estimated economic loss of 5,862,000,000 Uganda shillings and, the least affected were public water stands with an estimated loss of 1,596,300,000 Uganda shillings (Table 28).

In 2022, latrine facilities (2,400) incurred the biggest damages due to disasters, with an estimated loss of 5,970,000,000 shillings followed by gravity scheme (44 schemes) with an estimated loss of 5,250,000,000 shillings. The least economic loss of affected water and sanitation facilities was from public water stands (470 stands) with an estimated loss of 2,381,000,000 shillings (Table 28). Generally, for the two years of assessment, hazards mostly affected latrine facilities (totaling to 6201) compared to other water and sanitation infrastructure.

Table 28. Extent of Damage to the water sources

Type of Scheme	2021		2022	
	Number affected/destroyed	Estimated loss in Ugx	Number affected/destroyed	Estimated loss in Ugx
Gravity Flow Schemes	27	5,866,000,000	44	5,250,000,000
Public Water Standpipes	704	1,596,300,000	470	2,381,000,000
Wells/Springs	701	3,165,100,000	931	4,766,000,000
Boreholes	551	6,855,000,000	435	3,335,800,000
Latrines/Sanitation facilities	3801	5,446,600,000	2400	5,970,000,000
Total	5,784	22,929,000,000	4,280	21,702,800,000

Table 29 below, shows the extent of hazard impacts to different water schemes by region. The findings show that, in 2021, Kigezi sub region suffered a proportionate loss of 39.03 percent due to damage of water and sanitation facilities followed by Rwenzori with 22.14 percent and Teso region 12.8 percent. Further analysis by scheme, during the period, indicated that the highest percentage of Water Sources damaged were Public Water stands accounting for 36 percent followed by Well springs with 35 percent. The lowest proportion damaged were the Gravity Flow schemes with only 1 percent as shown in Table 29.

Table 29. Extent of Damage to Water schemes by Sub region in 2021

Sub Region	Gravity Flow Schemes	Public Water Stands	Wells Springs	Boreholes	Total	Proportion
Kigezi	10	268	471	25	774	39.03%
Rwenzori	3	332	63	41	439	22.14%
Teso	0	2	71	181	254	12.81%
Karamoja	3	0	1	156	160	8.07%
West Nile	7	24	4	52	87	4.39%
Ankole	3	78	2	0	83	4.19%
Bukedi	0	0	12	63	75	3.78%
Lango	0	0	38	12	50	2.52%
Acholi	0	0	19	6	25	1.26%
Busoga	0	0	11	2	13	0.66%
Buganda South	0	0	2	8	10	0.50%
Elgon	0	0	7	0	7	0.35%
Buganda North	0	0	0	5	5	0.25%
Bunyoro	1	0	0	0	1	0.05%
Total	27	704	701	551	1,983	100.00%
Percentage Contribution Per Scheme	1%	36%	35%	28%	100%	

During 2022, a total of 1,880 water sources were damaged of which the highest proportion of water sources/schemes were in Rwenzori accounting for 55.74 percent followed by those from Kigezi sub region with nearly 28.4 percent and Teso sub region being the third with 8.24 percent. Further analysis by Type of Water scheme in 2022, showed that the highest proportion of water schemes damaged were Well Springs accounting for 50 percent followed by public water stand pipes with 25 percent as shown in Table 30.

Table 30. Extent of Damage to Water schemes by Sub region in 2022

Sub Region	Gravity Flow Schemes	Public Water Stands	Wells Springs	Boreholes	Total	Proportion	Latrines Sanitation facilities
Rwenzori	26	344	475	203	1048	55.74%	151
Kigezi	14	95	392	33	534	28.40%	681
Teso	0	4	17	134	155	8.24%	0
Buganda North	0	6	14	24	44	2.34%	2
West Nile	0	16	2	6	24	1.28%	15
Acholi	0	0	15	4	19	1.01%	0
Buganda South	0	0	6	7	13	0.69%	0
Busoga	0	0	0	12	12	0.64%	5
Lango	0	5	6	0	11	0.59%	205
Bukedi	0	0	0	11	11	0.59%	0
Elgon	3	0	4	0	7	0.37%	498
Ankole	1	0	0	1	2	0.11%	43
Karamoja	0	0	0	0	0	0.00%	795
Bunyoro	0	0	0	0	0	0.00%	5
Total	44	470	931	435	1,880	100.00%	2,400
Percentage Contribution Per Scheme	2%	25%	50%	23%	100%		

Furthermore, assessment results for 2021 (Table 31) show that Kigezi sub region experienced the biggest damages in gravity flow scheme facilities with losses amounting to 3,635,000,000 shillings followed by Teso sub region which experienced more borehole scheme damages (181) estimated at 2,661,000,000 shillings in losses. In 2022, Rwenzori sub region recorded the biggest damages in gravity flow schemes with losses estimated at 3.6 billion Uganda shillings. The Kigezi sub region followed in gravity flow scheme damages with an estimated loss of 1,650,000,000 shillings (Table 32).

Table 31. Extent of damage to the Water and Sanitation Sector per region by type of water scheme 2021

Sub Region	Gravity Flow Schemes	Estimated Loss	Public Water Stands	Estimated Loss	Wells Springs	Estimated Loss	Boreholes	Estimated Loss
Acholi	-	-	-	-	19	136,000,000	6	154,272,000
Ankole	3	57,000,000	78	73,600,000	2	32,000,000	-	-
Buganda North	-	-	-	-	0	-	5	150,000,000
Buganda South	-	-	-	-	2	12,000,000	8	180,000,000
Bukedi	-	-	-	-	12	15,250,000	63	115,000,000
Bunyoro	1	50,000,000	-	-	-	-	-	-
Busoga	-	-	-	-	11	45,000,000	2	120,000,000
Elgon	-	-	-	-	7	40,000,000	-	-
Karamoja	3	320,000,000	-	-	1	10,000,000	156	1,996,000,000
Kigezi	10	3,635,000,000	268	112,500,000	471	1,358,000,000	25	165,000,000
Lango	-	-	-	-	38	90,000,000	12	230,000,000
Rwenzori	3	1,800,000,000	332	1,345,000,000	63	1,000,000,000	41	482,000,000
Teso	-	-	2	45,500,000	71	427,000,000	181	2,661,000,000
West Nile	7	-	24	22,000,000	4	3,200,000	52	594,000,000
Total	27	5,862,000,000	704	1,598,600,000	701	3,168,450,000	551	6,847,272,000

Table 32. Extent of damage to the Water and Sanitation Sector per region by type of water scheme 2022.

Sub Region	Gravity Flow Schemes	Estimated Loss (Ugx)	Public Water Stands	Estimated Loss (Ugx)	Wells Springs	Estimated Loss (Ugx)	Boreholes	Estimated Loss (Ugx)
Acholi	-	-	-	-	15	126,000,000	4	79,272,000
Ankole	1	12,000,000	-	-	-	-	1	24,757,698
Buganda North	-	-	6	350,000,000	14	135,000,000	24	520,000,000
Buganda South	-	-	-	-	6	13,000,000	7	15,000,000
Bukedi	-	-	-	-	-	-	11	29,000,000
Bunyoro	-	-	-	-	-	-	-	-
Busoga	-	-	-	-	-	-	12	335,000,000
Elgon	3	-	-	-	4	12,000,000	-	-
Karamoja	-	-	-	-	-	-	-	-
Kigezi	14	1,650,000,000	95	38,000,000	392	1,348,000,030	33	235,000,000
Lango	-	-	5	25,000,000	6	48,000,000	-	-
Rwenzori	26	3,590,000,000	344	398,500,000	475	2,939,000,000	203	925,000,000
Teso	-	-	4	1,550,000,000	17	121,000,000	134	989,000,000
West Nile	-	-	16	17,000,000	2	16,000,000	6	180,000,000
Total	44	5,252,000,000	470	2,378,500,000	931	4,758,000,030	435	3,332,029,698

In addition, comparisons were made in terms of extent of damage by each type of hazard on gravity flow, public water stands, wells/springs, boreholes and respective estimated economic loss between 2021 and 2022 (See Table 33 and Table 34). The results indicate that the cost of damage on latrines by floods declined from 3,920,000,000 shillings in 2021 to 2,727,520,000 shillings in 2022. However, in 2022, the largest economic loss was due to landslides on gravity flow schemes with an estimated economic loss of 3,232,000,000 shillings (up from 1,315,000,000 shillings the previous year).

Generally, the assessment revealed that floods, drought, prolonged dry spells, landslides, and hailstorms majorly affected gravity flow schemes, public water stands, wells, boreholes, and latrines in both 2021 and 2022 causing huge losses in the sector (Table 33 & Table 34).

Table 33. Extent of damage to the Water and Sanitation Sector per year by type of water scheme by disaster 2021

Type of Hazard	Gravity Flow Schemes	Estimated Loss (Ugx)	Public Water Stands	Estimated Loss (Ugx)	Wells Springs	Estimated Loss (Ugx)	Boreholes	Estimated Loss (Ugx)	Latrines Sanitation facilities	Estimated Loss (Ugx)
Floods	11	3,121,000,000	429	1,472,300,000	244	855,400,000	282	3,597,000,000	3,715	3,920,000,000
Drought	2	200,000,000	12	12,000,000	19	72,050,000	201	1,875,000,000	52	1,175,000,000
Prolonged dry spells	10	371,000,000	213	68,800,000	433	2,193,000,000	58	996,272,000	2	50,000,000
Landslides	3	1,315,000,000	-	-	5	48,000,000	-	-	8	200,000,000
Hail/Wind storm	-	-	2	45,500,000	-	-	4	120,000,000	14	34,600,000
Conflict	1	5,000,000	48	-	-	-	6	72,000,000	10	50,000,000
Total	27	5,012,000,000	704	1,598,600,000	701	3,168,450,000	551	6,660,272,000	3,801	5,429,600,000

Table 34. Extent of damage to the Water and Sanitation Sector per year by type of water scheme by disaster 2022

Type of Hazard	Gravity Flow Schemes	Estimated Loss (Ugx)	Public Water Stands	Estimated Loss (Ugx)	Wells Springs	Estimated Loss (Ugx)	Boreholes	Estimated Loss (Ugx)	Latrines Sanitation facilities	Estimated Loss (Ugx)
Floods	22	1,780,000,000	52	415,500,000	208	1,185,000,000	171	1,321,000,000	1,992	2,727,520,000
Drought	2	50,000,000	12	66,000,000	4	4,000,000	8	56,000,000	-	-
Prolonged dry spells	6	190,000,000	94	1,548,000,000	688	1,337,000,000	195	1,355,272,000	2	50,000,000
Landslides	14	3,232,000,000	300	260,000,000	23	84,000,030	-	-	118	1,336,000,000
Hail/Wind storm	-	-	8	75,000,000	8	48,000,000	1	24,757,698	25	200,000,000
Conflict	-	-	-	-	-	-	60	320,000,000	263	250,000,000
Total	44	5,252,000,000	464	2,364,500,000	931	2,658,000,030	435	3,077,029,698	2,400	4,563,520,000

5.5.3 Estimated loss of Damage to type of Water Scheme by year

Data was also collected on the estimated expenditure to repair damage caused by hazards (Table 35). The findings show that a total of nearly 39.8 billion would be used to restore the affected water sources for two years (2021 & 2022). Additionally, water sources affected by floods required the majority of funds 51.26% (nearly 20.4 billion shillings) followed by prolonged dry spell with 20.51 percent.

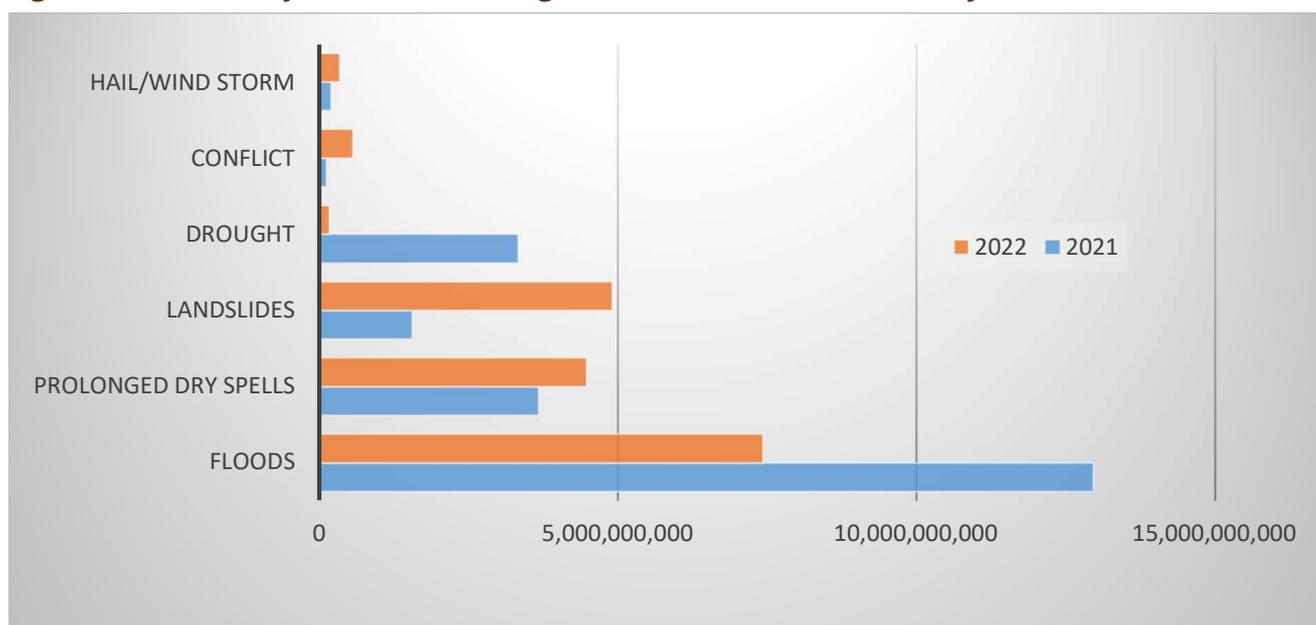
Year on year comparison showed that there was a reduction in estimated restoration costs of 18.1 percent from 21.9 billion to 17.9 billion with the highest arising from flood impact on water sources as shown in Table 35.

Figure 10 below, shows floods caused the largest impact followed by prolonged dry spells, landslides and drought to water sources.

Table 35. Estimated restoration Cost to Water Sources by type of Disaster by year of occurrence.

Type of Hazard that occurred	2021	2022	Total	Proportional Change	% Change in the costs between 2021 and 2022
Floods	12,965,700,000	7,429,020,000	20,394,720,000	51.26%	-42.70%
Prolonged dry spells	3,679,072,000	4,480,272,000	8,159,344,000	20.51%	21.78%
Landslides	1,563,000,000	4,912,000,030	6,475,000,030	16%	214.27%
Drought	3,334,050,000	176,000,000	3,510,050,000	9%	-94.72%
Conflict	127,000,000	570,000,000	697,000,000	2%	348.82%
Hail/Wind storm	200,100,000	347,757,698	547,857,698	1%	73.79%
Total	21,868,922,000	17,915,049,728	39,783,971,728	100.00%	

Figure 10. Extent of Economic damage on water sources caused by disasters



In summary, a total of 10,067 water sources were damaged over two years by six (6) hazards; 5,791 and 4,276 water schemes in 2021 and 2022 respectively. The highest proportion by type of hazard that affected Water Schemes was flooding accounting for 70.8 percent followed by prolonged dry spell with 16.9 percent.

The 2021 and 2022 hazards led to a cumulative estimated economic loss of 44.6 billion shillings with 22.9 billion in 2021 and 21.7 billion in 2022. Year to year, comparison showed that there was a reduction in estimated restoration costs of 5.3 percent from 22.9 billion to 21.7 billion with the highest arising from flood hazard impacts on different types of water sources.

Regional analysis showed that, in 2021, Kigezi region (39.03%) had the highest number of damaged water sources followed by Rwenzori with 22.14% with Teso region and Bunyoro the least affected. Further analysis by scheme, during the period, indicated that the highest percentage of water sources damaged were public water-stands accounting for 36 percent followed by Well springs with 35 percent in 2021 with the two taking a reverse position in 2022, where well springs had 50% and public water stands were at 25% damages. Gravity Flow schemes suffered the least number of damages in both years.

5.6 Impact of Hazards on the Education Sector

This section presents results from the assessment on impact of hazards on the Education Sector infrastructure in the country. This is in terms of number of school buildings/ blocks partially/ completely damaged and the estimated losses in primary, secondary and tertiary education institutions.

5.6.1 Extent of Damage by category of Educational Institution

The 2021/22 assessment showed how different levels of education institutions were impacted on by various hazards mostly hail/windstorms, followed by floods, and least impact was from landslides. Primary Education Sub Sector, which experienced the most damages over the two years, in 2021 reported the biggest economic losses UGX 8,414,540,000 from partial damages to at least 180 blocks and UGX 12,106,656,000 shillings to 134 completely destroyed blocks. In 2022, a similar pattern was observed where 187 blocks in the primary sub sector were partially destroyed and up to 173 were completely destroyed with estimated losses amounting to 8,406,645,000 and 11,073,715,312 shillings respectively.

Estimated losses to disaster in 2021 and 2022, were higher in primary level sub sector followed by secondary while the tertiary level had the least estimated losses as shown in Table 36 below.

Table 36. Extent of Damage for different Educational Institution for year 2021 & 2022

Category of Educational Institution	2021				2022			
	Blocks partially destroyed	Estimated loss in UGX	Blocks Completely destroyed	Estimated loss in UGX	Blocks partially destroyed	Estimated loss in UGX	Blocks Completely destroyed	Estimated loss in UGX
Primary	180	8,414,540,000	134	12,106,656,000	187	8,406,645,000	173	11,073,715,312
Secondary	28	1,605,000,000	37	7,063,000,000	26	2,165,400,000	7	530,000,000
Tertiary	12	635,000,000	-	-	1	25,000,000	1	250,000,000
Total	220	10,654,540,000	171	19,169,656,000	214	10,597,045,000	181	11,853,715,312

5.6.1.1. Extent of Damage on Primary Education Institutions

Further analysis indicated that in 2021, hailstorms with the largest impact affected 98 blocks, causing losses, estimated at 7,413,656,000 shillings (Table 37). This was higher in 2022 151 destroyed blocks estimated at 9,570,715,312 shillings (Table 38). Floods ranked second after hailstorms and these contributed to 32 partially destroyed blocks with an estimated economic loss amounting to 3,900,000,000 shillings in 2021, and 651,000,000 shillings in 2022 accruing from 15 partially destroyed blocks (Table 38). The COVID19 pandemic despite not causing structural damage was reported to have affected at least 50,170 learners and 907 teachers in the year 2021 from the districts assessed.

Table 37. Extent of Damage by Category of Educational Institution-Primary by year 2021

Type of Hazard that occurred	Blocks partially destroyed	Estimated loss in UGX	Blocks Completely destroyed	Estimated loss in UGX	Bath shelters destroyed	Estimated loss in UGX	Learners affected	Teachers affected	Estimated loss of Teaching & Non-Teaching in UGX
Floods	52	1,705,000,000	32	3,900,000,000	52	1,284,000,000	8,531	155	155,746,000
Prolonged dry spells	1	20,000,000	-	-	-	-	-	-	-
Landslides	4	78,000,000	4	793,000,000	9	69,000,000	940	18	60,000,000
Hail/Wind storm	122	6,578,540,000	98	7,413,656,000	27	784,000,120	22,777	233	1,661,320,000
Pandemic	-	-	-	-	-	-	50,170	907	-
Conflict	-	8,000,000	-	-	-	-	2,719	65	-
Total	179	8,389,540,000	134	12,106,656,000	88	2,137,000,120	85,137	1,378	1,877,066,000

Table 38. Extent of Damage by Category of Educational Institution-Primary by year 2022

Type of Hazard that occurred	blocks partially destroyed	Estimated loss in UGX	blocks Completely destroyed	Estimated loss in UGX	bath -shelters destroyed	Estimated loss in UGX	learners affected	Teachers affected	Estimated loss of Teaching & Non -Teaching in UGX
Floods	58	3,222,800,000	15	651,000,000	81	651,000,000	46,493	477	379,000,000
Drought	-	-	-	-	-	-	18,895	404	-
Prolonged dry spells	-	-	-	-	-	-	18,895	404	-
Landslides	2	-	5	800,000,000	-	-	1,080	13	50,000,000
Hail/Wind storm	93	4,843,100,000	151	9,570,715,312	58	1,715,000,000	46,547	509	3,096,900,120
Lightning	3	170,500,000	-	-	-	-	388	23	5,000,000
Conflict	-	12,000,000	-	-	-	-	3,584	83	-
Total	156	8,248,400,000	171	11,021,715,312	139	2,366,000,000	135,882	1,913	3,530,900,120



Photo: School Classroom block affected by storms in Buhweju district

5.6.1.2. Extent of Damage on Secondary Education Institutions

The assessment shows that secondary school sub sector was mainly affected by hail/wind storms where 37 secondary school blocks were completely destroyed, contributing to an estimated loss of 7,063,000,000 shillings in 2021 (See Table 39). In 2022, the school blocks completely destroyed and the corresponding cost in losses reduced to 6 blocks and 230,000,000 shillings respectively (see Table 40). Generally, the secondary schools were largely affected by floods, lightening, and hail/wind storm disasters, which partially and/or completely destroyed school infrastructure in 2022 while in 2021, floods, hailstorms, and prolonged dry spells inflicted the biggest economic losses on the secondary school institutions.

Table 39. Extent of Damage by Category of Educational Institution-Secondary in the year 2021

Type of Hazard that occurred	blocks partially destroyed	Estimated loss in UGX	blocks Completely destroyed	Estimated loss in UGX	Bath-shelters destroyed	Estimated loss in UGX	Learners affected	Teachers affected	Estimated loss of Teaching & Non-Teaching Materials in UGX
Floods	16	677,000,000	-	-	65	1,113,000,000	2,292	87	-
Prolonged dry spells	1	25,000,000	-	-	-	-	-	-	-
Hail/Wind storm	11	903,000,000	37	7,063,000,000	42	262,000,000	6,747	117	390,000,000
Lightning	-	-	-	-	-	-	5	-	-
Total	28	1,605,000,000	37	7,063,000,000	107	1,375,000,000	9,044	204	390,000,000

Table 40. Extent of Damage by Category of Educational Institution-Secondary in the year 2022

Type of Hazard that occurred	Blocks partially destroyed	Estimated loss in UGX	Blocks Completely destroyed	Estimated loss in UGX	Bath-shelters destroyed	Estimated loss in UGX	Learners affected	Teachers affected	Estimated loss of Teaching & Non-Teaching in UGX
Floods	16	1,303,000,000	-	-	28	592,000,000	1,450	248	78,800,000
Hail/Wind storm	3	210,000,000	6	230,000,000	4	95,000,000	991	51	15,000,000
Lightning	7	652,400,000	-	-	-	-	431	120	2,300,000
Pandemic	-	-	-	-	-	-	4	-	-
Other	-	-	1	300,000,000	-	-	216	-	300,000
Total	26	2,165,400,000	7	530,000,000	32	687,000,000	3,092	419	96,400,000

5.6.1.3. Extent of Damage on Tertiary Education Institutions

The assessment of hazard impact on tertiary institutions shows that infrastructure was mainly damaged by floods, hailstorms, prolonged dry spells and tremors in 2021 (Table 41). Floods partially damaged 6 blocks and 6 bath shelters, estimated at 270,000,000 and 44,000,000 Uganda shillings respectively in losses. This was followed by tremors that partially damaged 4 blocks amounting to 240,000,000 shillings in losses. The least impact on tertiary institutions was by prolonged dry spells and hailstorms.

While in 2022, hailstorms inflicted the largest damages on tertiary institutions by completely destroying one block and two bath shelters, partially destroying one block, affecting 920 students and 3 teachers/tutors. (Table 42).

Table 41. Extent of Damage Tertiary Institution in the year of 2021

Type of Hazard that occurred	blocks partially destroyed	Estimated loss in UGX	Bath-shelters destroyed	Estimated loss in UGX	Learners affected	Teachers affected	Estimated loss of Teaching & Non -Teachings in UGX
Floods	6	270,000,000	6	44,000,000	169	39	-
Prolonged dry spells	1	25,000,000	-	-	-	-	-
Hail/Wind storm	1	100,000,000	-	-	-	-	-
Tremors (Earthquake)	4	240,000,000	-	-	-	-	-
Total	12	635,000,000	6	44,000,000	169	39	0

Table 42. Extent of Damage Tertiary Institution in the year of 2022

Type of Hazard that occurred	blocks partially destroyed	Estimated loss in UGX	blocks Completely destroyed	Estimated loss in UGX	bath -shelters destroyed	Estimated loss in UGX	learners affected	teachers affected	Estimated loss of Teaching & Non -Teaching in UGX
Floods	-	-	-	-	4	56,000,000	-	-	-
Hail/Wind storm	1	25,000,000	1	250,000,000	2	35,000,000	920	3	780,000,000
Total	1	25,000,000	1	250,000,000	6	91,000,000	920	3	780,000,000

5.6.2. Regional Extent of Damage on Primary Education

Regional analysis on the impact of hazards shows most affected education institutions were from Busoga sub region where 50 blocks were reportedly partially damaged with an estimated economic loss of 2,130,000,000 shillings while the Rwenzori sub region registered the largest number of completely destroyed blocks with an estimated economic loss of 5,550,000,000 shillings for 33 blocks. Bunyoro sub region, was the least affected by disasters in terms of number of partially damaged blocks estimated at 4,000,000 shillings while Acholi, Karamoja, and West Nile sub regions never registered any cases of completely destroyed primary school facilities.

Conversely in 2022, Bukedi sub region suffered the biggest loss of partially damaged blocks, estimated loss of 2,380,000,000 while Ankole sub region experienced the largest number of completely destroyed blocks estimated at 3,020,000,000. Buganda North, Acholi, Bunyoro, Karamoja and west Nile suffered the least hazard impacts to the sub sector for the year 2022 (see Table 43 and 44 for further details).

Table 43. Regional extent of damage for primary institutions in 2021

Sub Regions	blocks partially destroyed	Estimated loss in UGX	blocks Completely destroyed	Estimated loss in UGX	bath -shelters destroyed	Estimated loss in UGX	learners affected	teachers affected	Estimated loss of Teaching & Non -Teaching Materials in UGX
Acholi	4	70,700,000	0	0	0	0	250	10	5,000,000
Ankole	16	1,066,000,000	22	1,107,000,000	0	0	740	16	932,000,000
Buganda North	2	67,000,000	2	500,000,000	2	120,000,000	1,836	15	35,000,000
Buganda South	20	670,000,000	8	355,000,000	0	0	1,162	22	240,000,000
Bukedi	3	27,840,000	12	1,400,000,000	6	110,000,000	2,410	74	35,320,000
Bunyoro	2	4,000,000	0	1,656,000	0	0	0	0	0
Busoga	50	2,130,000,000	27	300,000,000	5	120	3,600	10	268,000,000
Elgon	17	438,000,000	2	93,000,000	13	115,000,000	860	18	14,000,000
Karamoja	4	68,000,000	0	0	0	0	2,719	65	0
Kigezi	3	116,000,000	9	949,000,000	10	0	2,173	42	175,000,000
Lango	16	767,000,000	16	831,000,000	9	37,000,000	10,342	49	78,500,000
Rwenzori	34	2,120,000,000	24	5,550,000,000	33	1,503,000,000	5,436	104	0
Teso	7	810,000,000	12	1,020,000,000	10	252,000,000	3,439	46	94,246,000
West Nile	2	60,000,000	0	0	0	0	50,170	907	0
Total	180	8,414,540,000	134	12,106,656,000	88	2,137,000,120	85,137	1,378	1,877,066,000

Table 44. Regional extent of damage for primary institutions in 2022

Sub Region	Blocks partially destroyed	Estimated loss in UGX	blocks Completely destroyed	Estimated loss in UGX	Bath -shelters destroyed	Estimated loss in UGX	Learners affected	Teachers affected	Estimated loss of Teaching & Non-Teaching Materials in UGX
Acholi	6	72,100,000	0	0	10	66,500,000	949	27	31,000,000
Ankole	21	1,480,000,000	44	3,020,000,000	2	60,000,000	980	16	780,000,000
Buganda North	0	0	3	330,000,000	0	0	2,132	12	58,000,000
Buganda South	3	95,000,000	7	525,000,000	5	25,000,000	1,335	16	155,000,000
Bukedi	28	2,380,000,000	19	725,000,000	0	0	9,072	152	31,280,000
Bunyoro	3	69,000,000	0	0	1	8,000,000	1,103	0	0
Busoga	4	450,000,000	21	643,000,000	0	0	1,791	24	548,200,120
Elgon	41	925,000,000	17	897,000,000	51	463,000,000	8,762	145	281,000,000
Karamoja	0	12,000,000	0	0	0	0	41,374	891	0
Kigezi	44	1,424,045,000	20	1,907,000,000	5	460,500,000	11,853	230	318,193,000
Lango	12	500,000,000	15	1,174,715,312	10	36,000,000	14,536	35	129,420,000
Rwenzori	20	674,000,000	18	887,000,000	17	1,051,000,000	2,374	40	79,000,000
Teso	4	325,000,000	9	965,000,000	38	196,000,000	46,544	413	1,200,000,000
West Nile	1	500,000	0	0	0	0	20	15	5,000,000
Total	187	8,406,645,000	173	11,073,715,312	139	2,366,000,000	142,825	2,016	3,616,093,120

5.6.3. Regional Extent of Damage on Secondary Education

The hazard impact assessment on secondary education sub sector (Table 45) showed that Teso sub region experienced the largest number of partially damaged blocks with estimated loss of 675,000,000 shillings. Conversely in 2022, Bukedi sub region recorded the most partially destroyed school blocks costed at 1,950,000,000 shillings in losses while Lango sub region (4) suffered the biggest number of completely destroyed secondary school blocks despite Kigezi recording a higher economic loss of 320,000,000 shillings (further details in Table 46).

Table 45. Regional extent of damage for secondary institutions in 2021

Sub Region	blocks partially destroyed	Estimated loss in UGX	blocks Completely destroyed	Estimated loss in UGX	bath - shelters destroyed	Estimated loss in UGX	learners affected	teachers affected	Estimated loss of Teaching & Non - Teaching in UGX
Acholi	0	0	0	0	0	0	0	0	0
Ankole	0	0	0	0	0	0	0	0	0
Buganda North	0	0	0	0	0	0	0	0	0
Buganda South	0	0	0	0	0	0	0	0	0
Bukedi	2	300,000,000	0	0	20	100,000,000	1,338	26	244,000,000
Bunyoro	0	0	0	0	0	0	0	0	0
Busoga	0	0	0	0	0	0	0	0	0
Elgon	4	72,000,000	0	0	6	72,000,000	1,880	48	28,000,000
Karamoja	0	0	0	0	0	0	0	0	0
Kigezi	0	0	0	0	0	0	0	0	0
Lango	3	220,000,000	4	463,000,000	19	94,000,000	2,940	19	118,000,000
Rwenzori	3	313,000,000	33	6,600,000,000	13	60,000,000	594	32	0
Teso	15	675,000,000	0	0	49	1,049,000,000	2,292	79	0
West Nile	1	25,000,000	0	0	0	0	0	0	0
Total	28	1,605,000,000	37	7,063,000,000	107	1,375,000,000	9,044	204	390,000,000

Table 46. Regional extent of damage for secondary institutions in 2022

Sub Region	blocks partially destroyed	Estimated loss in UGX	blocks Completely destroyed	Estimated loss in UGX	bath - shelters destroyed	Estimated loss in UGX	learners affected	teachers affected	Estimated loss of Teaching & Non - Teaching Materials in UGX
Acholi	0	0	0	0	0	0	0	0	0
Ankole	0	0	0	0	0	0	0	0	0
Buganda North	0	0	0	0	0	0	0	0	0
Buganda South	0	0	0	0	0	0	0	0	0
Bukedi	15	1,950,000,000	0	0	10	500,000,000	1,290	360	81,100,000
Bunyoro	0	0	0	0	0	0	5	0	0
Busoga	0	0	0	0	0	0	0	0	0
Elgon	0	0	0	0	0	0	0	0	0
Karamoja	0	0	0	0	0	0	0	0	0
Kigezi	1	20,000,000	2	320,000,000	0	0	346	18	86,100,000
Lango	1	160,000,000	4	100,000,000	19	124,000,000	215	11	15,000,000
Rwenzori	8	5,400,000	0	0	0	0	0	0	0
Teso	1	30,000,000	1	110,000,000	3	63,000,000	1,236	30	0
West Nile	0	0	0	0	0	0	0	0	0
Total	26	2,165,400,000	7	530,000,000	32	687,000,000	3,092	419	182,200,000

5.6.4. Regional Extent of Damage on Tertiary Education

At tertiary institutional level, the results shown in Table 47 below indicates that Teso sub region suffered the biggest loss from partially destroyed blocks estimated at 270,000,000 shillings, followed by Rwenzori (UGX 240,000,000) sub region. On the contrary, in 2022, only Lango and West Nile sub regions experienced single cases each of completely destroyed school blocks and partially destroyed blocks respectively. Teso sub region was the only one to report damages to bath shelter damages for the year 2022 (Table 48).

Table 47. Regional extent of damage for tertiary institutions in 2021

Sub Region	Blocks partially destroyed	Estimated loss in UGX	Blocks Completely destroyed	Estimated loss in UGX	Bath - shelters destroyed	Estimated loss in UGX	Learners affected	Teachers affected	Estimated loss of Teaching & Non -Teaching Materials in UGX
Acholi	0	0	0	0	0	0	0	0	0
Ankole	0	0	0	0	0	0	0	0	0
Buganda North	0	0	0	0	0	0	0	0	0
Buganda South	0	0	0	0	0	0	0	0	0
Bukedi	0	0	0	0	0	0	0	0	0
Bunyoro	0	0	0	0	0	0	0	0	0
Busoga	1	100,000,000	0	0	0	0	0	0	0
Elgon	0	0	0	0	0	0	0	0	0
Karamoja	0	0	0	0	0	0	0	0	0
Kigezi	0	0	0	0	0	0	0	0	0
Lango	0	0	0	0	0	0	28	0	0
Rwenzori	4	240,000,000	0	0	0	0	0	0	0
Teso	6	270,000,000	0	0	6	44,000,000	141	39	0
West Nile	1	25,000,000	0	0	0	0	0	0	0
Total	12	635,000,000	0	0	6	44,000,000	169	39	0

Table 48. Regional extent of damage for tertiary institutions in 2022

Sub Region	Blocks partially destroyed	Estimated loss in UGX	Blocks Completely destroyed	Estimated loss in UGX	Bath - shelters destroyed	Estimated loss in UGX	Learners affected	Teachers affected	Estimated loss of Teaching & Non -Teaching Materials in UGX
Acholi	0	0	0	0	0	0	0	0	0
Ankole	0	0	0	0	0	0	0	0	0
Buganda North	0	0	0	0	0	0	0	0	0
Buganda South	0	0	0	0	0	0	0	0	0
Bukedi	0	0	0	0	0	0	0	0	0
Bunyoro	0	0	0	0	0	0	0	0	0
Busoga	0	0	0	0	0	0	0	0	0
Elgon	0	0	0	0	0	0	0	0	0
Karamoja	0	0	0	0	0	0	0	0	0
Kigezi	0	0	0	0	0	0	0	0	0
Lango	0	0	1	250,000,000	2	35,000,000	920	3	780,000,000
Rwenzori	0	0	0	0	0	0	0	0	0
Teso	0	0	0	0	4	56,000,000	0	0	0
West Nile	1	25,000,000	0	0	0	0	0	0	0
Total	1	25,000,000	1	250,000,000	6	91,000,000	920	3	780,000,000

5.7 Impact of Disasters on the Protection Services

This subsection presents findings on hazard impacts to protection services. The assessment is based on the extent of impacts from different types of hazards in terms of the number of child-headed households, female and male headed households, and number of elderly persons affected. The presentation includes protection issues arising from the 2021 and 2022 disasters, availability of protection services including police services, community policing and welfare and probation services. It also covers safety and security of children and women affected by disasters and arising gender-based cases against women and girls affected by disaster occurrence.

5.7.1 Extent of disaster to Protection services by category in 2021 and 2022

A total of 16,830 child-headed households were affected by disasters, majority arising from hailstorm impacts (4,263 households – contributing 25.3% overall), followed by prolonged dry spell (2,489 households, contributing 14.8% overall). Similarly, 313,998 female-headed households overall, were affected and the greatest impact was caused by prolonged dry spells (154,345 households, contributing 49.2% overall), followed by the pandemic –COVID19, contributing 40.3% overall effect. While 50,900 elderly persons were affected by disasters more so by pandemics (affecting 15,314 elderly persons). The largest impact was in the female headed household, 18 and 6 times more than the child head households and elderly head households, respectively. See table 49 for details.

Table 49. Extent of disaster to Protection services by category in 2021

Type of Disaster / Emergency that occurred	Number of Child headed Households	Number of Female headed Households	Number of Elderly persons affected
Floods	1,726	4,059	7,187
Drought	1,539	18,104	14,211
Prolonged dry spells	2,489	154,345	7,415
Landslides	85	300	108
Hail/Wind storm	4,263	4,174	2,730
Epidemic	165	132	29
Lightning	17	20	16
Pandemic	2,524	126,602	15,314
Earthquake	0	0	1
Conflict	2,324	1,804	1,354
Pests & Diseases	1,056	3,851	1,892
Other	642	607	200
Total	16,830	313,998	50,457

In comparison with 2022, as shown in Table 50, the number of child-headed households affected by hazards increased to 26,723 (i.e. 58.8% increase) compared to the year 2021, with the largest impact caused by pests and diseases (40.98% contribution in 2022). Whereas the number of female-headed households affected by disasters in 2022 decreased to 52,779 (almost 83.2% reduction) from the year 2021. However, in 2022, the biggest effect was caused by prolonged dry spells (20,752, i.e. 39.3% overall contribution). In addition, a total of 68,253 (35.2% increase from 2021) elderly persons were affected by disasters out of which 23,050 were affected by prolonged dry spells.

Unlike in the year 2021, the largest impact of disasters was experienced by the elderly headed households, 2.5 times higher than the child headed households and 1.3 times higher than female headed households. In general, hailstorms, prolonged dry spells, pandemics, pests and diseases, floods, and drought significantly affected child-headed households, followed by female-headed households and the elderly persons in 2022 as compared to 2021.

Table 50. Extent of disaster to Protection services by category in 2022

Type of Disaster / Emergency that occurred	Number of Child headed Households	Number of Female headed Households	Number of Elderly persons affected
Floods	1,407	3,196	6,238
Drought	624	1,359	1,260
Prolonged dry spells	2,774	20,752	23,050
Landslides	153	467	310
Hail/Wind storm	5,914	5,096	2,436
Epidemic	770	174	17
Lightning	34	28	12
Pandemic	3,447	9,041	22,247
Earthquake	0	0	0
Conflict	635	759	154
Pests & Diseases	10,952	11,563	12,513
Other	13	344	16
Total	26,723	52,779	68,253

5.7.2. Gender Based Violence (GBV) cases against women and girls due to disasters

Gender based violence cases were specifically reported for women and girls due to hazard impacts between 2021 and 2022. The assessment results show that the number of GBV cases reported against women increased from 2487 in 2021 to 2968 in 2022 (an increase of 19.3% women abused). Women suffered most from the effect of conflict, prolonged dry spells, floods and pandemics in both 2021 and 2022. Conflicts (500) and prolonged dry spells (435) were reported to be the most significant causes of violence against women in 2021. While in 2022, conflict (653) was reported to be the major effect of violence followed by floods (585) and then prolonged dry spells (401).

Conversely, the reported cases of violence against girls also increased from 2,927 to 6,524 cases between 2021 and 2022 respectively, reflecting an increase by 122.9%. The largest single contributing factor for both years (2021 & 2022) was the COVID 19 pandemic, despite landslides having a larger overall impact in 2022. (see Table 51 below for details).

Table 51. Number of GBV cases across the two years

Type of Hazard	Number Reported Women		Number Reported Girls	
	2021	2022	2021	2022
Floods	383	585	249	274
Drought	320	350	396	660
Prolonged dry spells	435	401	108	89
Landslides	80	81	0	2,004
Hail/Wind storm	48	149	509	793
Epidemic	1	111	4	102
Lightning	8	25	38	36
Pandemic	347	261	1,222	1,156
Earthquake	1	0	4	0
Conflict	500	653	273	242
Pests & Diseases	63	223	107	214
Other	301	129	17	954
Total	2,487	2,968	2,927	6,524

The analysis of hazard impacts on GBV according to table 52, shows that floods, pandemics, hailstorms, pests and disease, prolonged dry spells, and conflicts had the largest negative contribution to Gender Based Violence cases committed in 2021 and 2022. Specifically, hailstorms had the highest impact on physical violence in 2021 while floods had the highest impact in 2022. Hailstorms had the highest contribution to most forms of GBV in both 2021 and 2022.

Table 52. Contribution of disaster to GBV cases by type

Type of Hazard	Physical		Sexual		Mental		Economic Harm		Emotional		Other GBV	
	2021	2022	2021	2022	2021	2022	2021	2022	2021	2022	2021	2022
Floods	14	15	14	15	15	16	13	15	14	15	18	19
Drought	10	4	10	5	10	7	9	4	9	5	12	8
Prolonged dry spells	10	8	9	9	10	11	10	8	10	9	14	13
Landslides	2	5	2	6	2	6	2	6	2	5	2	6
Hail/Wind storm	17	15	17	17	19	18	18	17	19	18	22	20
Epidemic	3	4	3	5	3	5	3	5	3	5	4	4
Lightning	7	5	7	6	7	5	7	5	7	5	9	6
Pandemic	14	6	14	6	15	7	13	7	13	7	18	9
Earthquake	3	0	3	0	3	0	3	0	3	0	4	0
Conflict	10	7	10	8	11	9	8	6	10	7	14	10
Pests & Diseases	12	12	11	13	11	12	11	12	13	11	14	14
Other	5	2	4	2	4	3	4	2	3	2	4	4
Total	107	83	104	92	110	99	101	87	106	89	135	113

5.7.3. Regional distribution of GBV reported against women and girls due to disaster effects

The analysis on the regional distribution of GBV against women due to disasters in 2021 showed that the Acholi sub region had the largest number of reported cases of violence (962), followed by Kigezi sub region (540) and Bukedi (402) sub region. conversely, in 2022, the Kigezi sub region experienced the highest number of violence cases (1,100) followed by West Nile (800) and Buganda North sub region (355) (Please see Table 53).

In 2021, analysis on GBV against girls showed, Kigezi reported the highest number of cases (2250) followed by Acholi (223) cases and Ankole (172) cases. Similarly, in 2022, Kigezi reported the highest number of GBV cases against girls (4,300) cases, almost double the case load in 2021 while West Nile was the second most affected with (990) cases, followed by Rwenzori sub region (434) (See Table 53 below).

Table 53. Number of GBV cases by region by year

Sub Region	Number Reported Women		Number Reported Girls	
	2021	2022	2021	2022
Acholi	962	223	365	138
Ankole	298	128	172	-
Buganda North	2	355	2	322
Buganda South	95	-	-	254
Bukedi	402	131	0	109
Busoga	42	9	45	-
Kigezi	540	1,100	2,250	4,300
Lango	142	65	37	40
Rwenzori	326	208	71	434
Teso	200	11	150	-
West Nile	3	800	-	990
Total	3012	3030	3092	6587

Analysis of the different forms of GBV in 2021 & 2022, indicates a slight decrease (21%) in the number of physical violence cases from 108 in 2021 to 85 in 2022. However, Acholi sub region recorded the highest number of physical violence cases in both 2021 (28 cases –representing 26% in all the regions) and 2022 (19 cases –representing 22% in all the regions). Similarly, there was a slight decrease (8.1%) in sexual violence cases recorded from 105 cases in 2021 to 95 in 2022 with Acholi sub region having the highest number of violence cases in sexual, mental, economic harm, emotional and all other forms of violence. This was followed by Ankole, Buganda North, Kigezi and North Buganda sub regions (Table 54).

Table 54. Number of GBV cases by category across regions

Sub Region	Physical		Sexual		Mental		Economic Harm		Emotional		Other GBV	
	2021	2022	2021	2022	2021	2022	2021	2022	2021	2022	2021	2022
Acholi	28	19	28	26	28	26	23	23	28	23	44	34
Ankole	16	6	16	6	17	6	15	6	16	6	18	8
Buganda North	16	9	16	9	17	9	16	9	16	9	18	9
Buganda South	2	3	2	4	4	5	4	3	4	3	4	4
Bukedi	5	2	5	2	5	2	5	2	5	2	4	0
Bunyoro	0	6	0	6	0	6	0	6	0	6	0	6
Busoga	2	0	2	0	2	0	2	0	2	0	4	0
Elgon	0	8	0	8	0	8	0	8	0	8	0	8
Karamoja	0	0	0	0	0	0	0	0	0	0	0	0
Kigezi	14	7	14	7	15	8	14	7	15	8	20	14
Lango	8	3	8	4	9	4	7	3	7	3	9	4
Rwenzori	11	7	8	7	8	10	10	7	8	7	6	6
Teso	6	10	6	10	6	10	6	10	6	10	8	12
West Nile	0	5	0	6	0	8	0	5	0	6	0	10
Total	108	85	105	95	111	102	102	89	107	91	135	115

5.7.4. Number of Children separated or disappeared as a result of Disaster by year

Some of the biggest impacts of hazards were experienced by children who were either separated from their families or displaced. Analysis of these child-specific impacts were analysed in table 55 below; a total of 1,114 and 1,388 children were separated from their families by disaster occurrences in 2021 and 2022 respectively while a total of 298 children disappeared in 2021 compared to 640 children in 2022, leading to an increase of over 111% from 2021 to 2022 compared to the children separated by disasters during the two years, with a decrease of 11.5% between 2021 to 2022.

A breakdown of impacts by type of hazard indicates that pandemics contributed to the largest number of separated children (583 cases, representing 52.3 % of total cases) in 2021, followed by conflict (295 cases, representing 26.5% of the total cases) while in 2022, pandemics highly led to separation of children (785 cases, representing 56.6% of total cases), followed by conflicts (320 cases, contributing to 23.1% of the total cases). Pandemics also caused disappearance of the biggest number of children (116) in 2021 compared to 310 children in 2022. Therefore, in summary the major hazards which led to child separation or disappearance were pandemics and conflicts.

Table 55. Number of Children separated or disappeared as a result of Disaster by year

Type of Hazard that occurred	Children Separated		Children Disappeared	
	2021	2022	2021	2022
Floods	111	83	18	84
Drought	45	0	55	0
Prolonged dry spells	41	137	9	127
Landslides	0	3	0	6
Hail/Wind storm	16	45	7	19
Epidemic	3	3	6	6
Lightning	8	5	9	11
Pandemic	583	785	116	310
Earthquake	3	0	6	0
Conflict	295	320	49	63
Pests & Diseases	6	4	17	8
Other	3	3	6	6
Total	1,114	1,388	298	640

Regional analysis as shown in table 56 below indicates, that in 2021, children from Kigezi sub region suffered the most from adverse impacts of hazards with 702 (42.9%) children separated from their families, followed by Acholi sub region that witnessed 576 (35.2%) children being separated. Similarly, in 2022, the Kigezi sub region had the highest number of children separated by disasters, amounting to 1000 (69.1%) children followed by the Rwenzori sub region that registered 180 cases (12.4% of the total cases). On the other hand, the highest number of children who disappeared due to disasters were from Rwenzori region in 2021 and Buganda North in the year 2022.

Table 56. Regional distribution of Number of Children separated or disappeared as a result of Disaster by year

Sub Region	Children Separated		Children Disappeared	
	2021	2022	2021	2022
Acholi	576	100	90	89
Ankole	96	0	0	1
Buganda North	0	114	0	334
Buganda South	63	42	0	24
Bukedi	11	11	0	3
Bunyoro	0	0	0	0
Busoga	15	0	0	0
Elgon	0	0	0	0
Karamoja	0	0	0	0
Kigezi	702	1,000	90	150
Lango	2	0	2	0
Rwenzori	170	180	127	50
Teso	0	0	0	0
West Nile	0	0	0	0
Total	1,635	1,447	309	651

5.8 Impact of Hazards on Transport Infrastructure

This subsection therefore, presents findings on the extent of damage caused by hazards on National roads, District roads, Municipal roads, Town Council roads, and Community Access roads in Uganda and estimated loss in Uganda shillings.

5.8.1 Extent of damage by type of disaster to Gravel roads across the different road categories

The transport sector was one of those that was not spared by the impact of hazards. The roads sub sector as seen in Table 57 below, shows hazards negatively impacted on roads across different regions in 2021 compared to 2022. This could be deduced from the kilometers affected (i.e. 56,980 Kms of roads completely damaged, 92% higher than in 2022), contributing to the total economic losses of UGX 28,606,509,003 (i.e. 26% higher than in 2022). Specifically, in 2021, municipal roads suffered the greatest hazard impacts in terms of completely destroyed roads (50,000 Km) with total estimated costs in losses worth 1.68 billion shillings, followed by community access roads (3,960 Km). However, in 2021, the biggest estimated losses on partially and completely destroyed roads were incurred on national roads (20.5 billion). In 2022, disasters majorly affected district roads with 1,796 Km destroyed contributing to an estimated economic loss of 2.78 billion shillings, followed by 1,655 km of community access roads contributing to an estimated economic loss of 1.4 billion shillings.

In general, disasters caused the biggest economic losses in national roads for the year of 2021 and 2022, respectively, the physical damage was higher in 2021 compared to 2022. Damages to district roads were estimated at 4.48 billion Uganda shillings in 2021 compared to 2.78 billion Uganda shilling in 2022. Community road damages were estimated at 1.3 billion Uganda shillings in 2021, and 1.4 billion Uganda shillings in the year 2022. For details see Table 57 below.

Table 57. Extent of road damage by type of disaster for the year 2021 and 2022

Category of Road Management	2021			2022		
	Number of KMs completely destroyed	Number of KMs Partially destroyed	Estimate Loss in UGX	Number of KMs completely destroyed	Number of KMs Partially destroyed	Estimate Loss in UGX
National Roads	1,135	1,296	20,516,313,900	915	873	16,293,297,500
District Roads	1,622	3,251	4,480,495,448	1,796	2,713	2,781,969,085
Municipal Roads	50,000	109	1,686,500,000	75	78	65,950,000
Town Council	263	489	555,662,700	143	372	573,697,500
Community Access	3,960	3,276	1,367,536,955	1,655	3,423	1,429,081,676
Total	56,980	8,421	28,606,509,003	4584	7,459	21,143,995,761



Photo: Alayaogik – Acamidako road is a class II district feeder road with the total length of 16Km affected by floods in 2021.



Photo: Community members trying to access the other side of water crossing on Ogobai – Okile road in order to get socio economic services from Kaberamaido district.

Disaster damages to gravel roads were majorly caused by floods, heavy storms and landslides (especially for the district roads (Table 58 and Table 59). In the year 2021, community access roads (with 3,960 Kms completely destroyed) were affected by floods, followed by district roads (1,622 Kms, completely destroyed) and national roads (1,135 Kms of roads completely destroyed (see Table 58). With regard to economic losses attributed to disasters, national roads had the highest economic loss of over 20.5 billion Uganda shillings, followed by district roads with 4.48 billion, municipal council roads with 1.68 billion, community access roads with 1.3 billion Uganda shillings, and town council roads 0.555 billion Uganda Shillings.

In the year 2022, the major roads affected by floods resulting into complete destruction included community access roads (with 1,655 Kms completely destroyed), followed by district roads (1,796 Kms, completely destroyed), and the national roads, with 915 Kms completely destroyed (Table 59). In terms of economic losses, national roads experienced the highest losses of 16.3 billion Uganda shillings followed by district roads with 2.78 billion Uganda shillings, community access roads, with 1.42 billion Uganda shillings, town council roads with 573 million Uganda shillings and municipal council roads at 65 million (See Table 59 for details).

Table 58. Extent of damage caused by type of hazard and type of disaster to Gravel roads in 2021

Type of Hazard that occurred	National Roads			District Roads			Municipal Roads			Town Council Roads			Community Access Roads		
	Kms Completely Destroyed	Partially Destroyed	Estimated Loss Ugx	Kms Completely Destroyed	Partially Destroyed	Estimated Loss Ugx	Kms Completely Destroyed	Partially Destroyed	Estimated Loss Ugx	Kms Completely Destroyed	Partially Destroyed	Estimated Loss Ugx	Kms Completely Destroyed	Partially Destroyed	Estimated Loss Ugx
Floods	954	1,064	20,353,313,410	1,410	2,452	4,409,875,423	4	95	1,686,500,000	232	376	488,551,700	3,768	2,906	1,231,086,955
Drought	2	1	25,000,000	-	-	-	-	-	-	5	30	10,000,000	0	0	0
Prolonged dry spells	-	-	-	-	-	-	-	-	-	-	-	-	1	8	12,200,000
Landslides	-	10	90,000,000	102	77	50,700,025	4	14	-	15	40	34,250,000	159	93	107,900,000
Hail/Wind storm	10	49	25,000,000	10	20	10,000,000	-	-	-	10	8	5,000,000	12	20	11,000,000
Other	133	70	23,000,490	100	651	9,920,000	-	-	-	1	35	9,620,000	20	249	5,350,000
Total	1099	1194	20,516,313,900	1622	3200	4,480,495,448	8	109	1,686,500,000	263	489	555,662,700	3960	3276	1,367,536,955

Table 59. Extent of damage caused by type of hazard and type of disaster to Gravel roads in 2022

Type of Hazard that occurred	National Roads			District Roads			Municipal Roads			Town Council			Community Access Roads		
	Kms Completely Destroyed	Kms Partially Destroyed	Estimated loss in UGX	Kms Completely Destroyed	Kms Partially Destroyed	Estimated loss in UGX	Kms Completely Destroyed	Kms Partially Destroyed	Estimated loss in UGX	Kms Completely Destroyed	Kms Partially Destroyed	Estimated loss in UGX	Kms Completely Destroyed	Kms Partially Destroyed	Estimated loss in UGX
Floods	860	788	16,104,297,500	1552	2226	2,577,684,085	5	59	54,750,000	138	366	434,697,500	1638	3358	1,211,081,676
Landslides	-	8	90,000,000	132	154	96,285,000	70	20	11,200,000	-	2	30,000,000	-	40	50,000,000
Hail/Wind storm	20	25	99,000,000	17	10	108,000,000	-	-	-	5	4	109,000,000	17	25	168,000,000
Other	35	45	-	95	215	-	-	-	-	-	-	-	-	-	-
Total	915	866	16,293,297,500	1796	2605	2,781,969,085	75	79	65,950,000	143	372	573,697,500	1655	3423	1,429,081,676

Results from regional distribution of road damage in kilometers attributed to disasters shows that in 2021, the Lango sub region experienced the largest national road destruction by disasters, with estimated costs worth 1.3 billion Uganda shillings (Table 60). This was generally followed by the Rwenzori and Acholi. However, with regard to economic losses due to road destruction, Rwenzori had the highest economic loss of 10.5 billion followed by Acholi with 4 billion.

For the community access roads, Teso was highly affected with the highest economic loss of 390 million from the 588 Kms of roads destroyed. In the year 2022, Rwenzori experienced the highest destruction of national roads (616 kms) followed by Acholi sub region (410 kms), although under this road category, Elgon had the highest economic loss of 5.8 billion Uganda shillings. The district roads were highly destroyed in Rwenzori, followed by Acholi, Kigezi, West Nile and Teso sub regions. For details see Table 61 below.

Table 60. Extent of damage by type of disaster to Gravel roads by Region in 2021

Sub Region	National Roads			District Roads			Municipal Roads			Town Council			Community Access Roads		
	Completely Destroyed	Kms Partially Destroyed	Estimated loss in UGX	Kms Completely Destroyed	Kms Partially Destroyed	Estimated loss in UGX	Kms Completely Destroyed	Kms Partially Destroyed	Estimated loss in UGX	Kms Completely Destroyed	Kms Partially Destroyed	Estimated loss in UGX	Kms Completely Destroyed	Kms Partially Destroyed	Estimated loss in UGX
Acholi	220	292	16,104,297,500	341	518	16,104,297,500	0	0	0	69	24	40,000,000	996	953	90,000,000
Ankole	4	28	307,900,000	12	174	582,000,000	0	0	0	1	38	31,200,000	21	279	103,500,000
Buganda North	0	13	0	8	43	525,118,953	0	0	0	0	0	0	0	0	0
Buganda South	35	53	430,000,000	90	230	0	4	42	0	0	4	13,000,000	0	8	9,000,000
Bukedi	0	0	0	94	291	294,220,000	0	0	0	11	11	26,350,000	27	17	100,500,000
Bunyoro	0	0	0	0	50	90,000,000	0	0	0	0	0	0	0	0	0
Busoga	0	0	0	65	361	100,600,000	0	0	0	2	16	60,000,000	22	460	267,261,000
Elgon	0	108	446,413,900	6	32	0	4	14	0	0	5	0	0	0	0
Karamoja	104	29	192,000,000	243	105	0	0	0	0	18	48	35,482,000	11	500	64,700,000
Kigezi	3	198	1,040,000,000	374	213	989,462,995	0	33	450,000,000	88	252	151,050,000	852	405	79,510,000
Lango	710	349	1,300,000,000	210	520	100,000,000	0	0	0	15	18	84,000,000	14	23	110,000,000
Rwenzori	59	23	10,500,000,000	47	113	135,835,000	0	14	786,500,000	15	28	31,545,000	399	147	72,200,000
Teso	0	0	0	30	44	567,580,000	0	0	0	23	26	68,035,700	314	274	391,365,955
West Nile	0	204	2,300,000,000	102	556	325,678,500	0	6	450,000,000	20	20	15,000,000	1303	210	79,500,000
Total	1,135	1,297	20,516,313,900	1,622	3,250	4,480,495,448	8	109	1,686,500,000	262	490	555,662,700	3,959	3,276	1,367,536,955

Table 61. Extent of damage by type of disaster to Gravel roads by Region in 2022

Sub Region	National Roads			District Roads			Municipal Roads			Town Council			Community Access Roads		
	Kms Completely Destroyed	Kms Partially Destroyed	Estimated loss in UGX	Kms Completely Destroyed	Kms Partially Destroyed	Estimated loss in UGX	Kms Completely Destroyed	Kms Partially Destroyed	Estimated loss in UGX	Kms Completely Destroyed	Kms Partially Destroyed	Estimated loss in UGX	Kms Completely Destroyed	Kms Partially Destroyed	Estimated loss in UGX
Acholi	223	187	4,770,322,500	388	459	235,700,000	0	0	0	74	15	110,000,000	1146	803	200,000,000
Ankole	5	58	1,092,600,000	17	213	254,500,000	0	0	0	1	43	80,475,000	26	288	16,640,000
Buganda North	0	6	90,000,000	116	64	197,100,000	0	0	0	0	0	0	0	0	0
Buganda South	35	45	0	95	215	0	0	0	0	0	4	30,000,000	0	6	70,000,000
Bukedi	0	0	0	67	88	304,250,146	0	0	0	3	10	42,500,000	27	17	16,033,000
Bunyoro	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Busoga	0	0	0	0	0	0	0	0	0	0	10	40,000,000	0	80	32,000,000
Elgon	0	18	5,810,000,000	4	104	550,000,000	2	16	0	0	0	0	0	150	140,000,000
Karamoja	0	0	0	0	10	0	0	0	0	0	0	0	0	0	0
Kigezi	40	186	1,060,000,000	200	525	269,800,000	73	60	472,000,000	40	233	95,722,500	120	656	100,000,000
Lango	20	25	1,800,000,000	17	10	108,000,000	0	0	0	5	4	40,000,000	17	25	100,000,000
Rwenzori	592	24	230,375,000	510	370	128,242,000	0	0	0	0	0	0	0	0	0
Teso	0	0	0	187	167	374,403,789	0	0	0	20	15	50,000,000	116	83	460,004,376
West Nile	0	324	1,440,000,000	196	489	359,973,150	0	3	187,500,000	0	38	85,000,000	203	1315	294,404,300
Total	915	873	16,293,297,500	1797	2,714	2,781,969,085	75	79	659,500,000	143	372	573,697,500	1655	3423	1,429,081,676

5.8.2 Extent of damage by type of disaster to Bridges

This section presents results of analysis of impact of disasters in terms of four categories of bridges; foot bridges, suspension bridges, cable bridges and beams bridges. Results in Table 62 show that disaster majorly affected, foot bridges, suspension bridges and beams bridges in both 2021 and 2022 but there were no recorded cases of damages to cable bridges in the assessment period (2021 and 2022). This is due to limited existence in the country.

The disasters assessment findings reveal that in 2021, the extent of damage on bridges was higher on foot bridges where 93 bridges were completely destroyed and 175 bridges partially destroyed with costs in losses estimated at 36.2 million shillings, followed by damages to six (6) beam bridges completely destroyed and 21 partially destroyed with a total estimated loss of 70 million shillings. Compared to 2022, disasters largely contributed to destruction of foot bridges where 348 were completely destroyed and 402 were partially destroyed with estimated cost of losses of up to 103 million shillings. This was followed by increased damage on suspension bridges with 47 completely destroyed and 28 partially destroyed, translating into an estimated loss of 28.6 million shillings. However, the highest total estimated losses (289 million shillings) accrued from destruction of beam bridges (See Table 62 below for details).

Table 62. Extent of damage and estimated economic loss to bridges by year

Category of Road Management	2021			2022		
	Completely destroyed	Partially destroyed	Estimate Loss in UGX	Completely destroyed	Partially destroyed	Estimate Loss in UGX
Foot bridges	93	175	36,200,000	348	402	103,279,000
Suspension bridges	1	5	34,200,000	47	28	28,600,000
Beam	6	21	70,400,000	23	16	289,000,000
Total	100	201	140,800,000	418	446	420,879,000

The results (Table 63) show a breakdown of specific hazard type across the four categories of bridges. Overall, floods, landslides, hail/wind storms caused damages to foot bridges, suspension bridges, and beam bridges in 2021. Specifically, hail/wind storms destroyed the biggest number of foot bridges where 70 were completely destroyed and 120 were partially destroyed, with estimated losses of 5.5 million shillings. However, floods contributed largely to the number of beam bridges destroyed with an estimated loss amounting to 50.4 million shillings (Table 63). In comparison with 2022, floods, landslide and hailstorm inflicted the greatest damage on bridges. Floods alone completely destroyed 223 foot bridges, and partially destroyed 247 of them with total estimated loss of 88.2 million shillings (Table 64).

Table 63. Extent of damage caused by type of hazard and type of disaster to Bridges in 2021.

Type of Hazard that occurred	Foot Bridges			Suspension Bridges			Beam Bridges		
	Completely Destroyed	Partially Destroyed	Estimated Loss	Completely Destroyed	Partially Destroyed	Estimated Loss	Completely Destroyed	Partially Destroyed	Estimated Loss
Floods	0	0	0	1	5	34,200,000	5	21	50,400,000
Landslides	14	46	30,700,000	0	0	0	0	0	0
Hail/Wind storm	70	120	5,500,000	0	0	0	0	0	0
Other	9	9	0	0	0	0	1	0	20,000,000
Total	93	175	36,200,000	1	5	34,200,000	6	21	70,400,000

Table 64. Extent of damage caused by type of hazard and type of disaster to Bridges in 2022.

Type of Hazard that occurred	Foot Bridges			Suspension Bridges			Beam Bridges		
	Completely Destroyed	Partially Destroyed	Estimated Loss	No Completely Destroyed	Partially Destroyed	Estimated Loss	Completely Destroyed	Partially Destroyed	Estimated Loss
Floods	223	247	88,279,000	47	28	28,600,000	23	16	289,000,000
Landslides	85	45	10,000,000	0	0	0	0	0	0
Hail/Wind storm	40	110	5,000,000	0	0	0	0	0	0
Total	348	402	103,279,000	47	28	28,600,000	23	16	289,000,000

Results on hazard impact on bridges as per table 65 below, shows that most sub regions experienced damages of foot, suspension and beam bridges in 2021. Results show that Busoga sub region had damages across all three categories of bridges, with Lango having the largest damage of foot bridges and Busoga for suspension plus beam bridges.

Table 65. Extent of damage by type of disaster to bridges by region in 2021

Sub Region	Foot Bridges			Suspension Bridges			Beam Bridges		
	Completely Destroyed	Partially Destroyed	Estimated Loss	Completely Destroyed	Partially Destroyed	Estimated Loss	Completely Destroyed	Partially Destroyed	Estimated Loss
Acholi	20	15	6,000,000	0	0	0	3	4	14,000,000
Ankole	0	0	0	0	0	0	1	0	20,000,000
Buganda South	17	15	6,000,000	0	0	0	0	0	0
Bunyoro	0	0	0	0	0	0	0	0	0
Busoga	12	28	6,400,000	1	3	30,000,000	1	17	17,000,000
Elgon	0	11	0	0	0	0	0	0	0
Karamoja	3	6	500,000	0	2	4,200,000	0	0	0
Kigezi	16	38	3,050,000	0	0	0	0	0	0
Lango	0	122	700,000	0	0	0	0	0	0
Teso	5	2	8,500,000	0	0	0	0	0	0
West Nile	4	6	5,050,000	0	0	0	1	0	19,400,000
Total	77	243	36,200,000	1	5	34,200,000	6	21	70,400,000

In 2022, Rwenzori had the most affected bridges where 221 were completely destroyed and 235 were partially destroyed, with total estimated losses of 150 million shillings. Buganda North reported damages in Suspension bridges with no damages reported on cable bridges. Acholi and Rwenzori recorded the highest damages on beam bridges. Further details are in table 66 below.

Table 66. Extent of damage by type of disaster to bridges by region in 2022

Sub Region	Foot Bridges			Suspension Bridges			Cable Bridges			Beam Bridges		
	Completely Destroyed	Partially Destroyed	Estimated Loss	Completely Destroyed	Partially Destroyed	Estimated Loss	Completely Destroyed	Partially Destroyed	Estimated Loss	Completely Destroyed	Partially Destroyed	Estimated Loss
Acholi	25	10	10,000,000	0	0	0	0	0	0	15	12	52,000,000
Ankole	1	3	0	0	0	0	0	0	0	1	3	57,000,000
Buganda North	18	12	14,000,000	47	25	28,600,000	0	0	0	0	1	10,000,000
Buganda South	9	9	0	0	0	0	0	0	0	0	0	0
Elgon	25	15	19,000,000	0	0	0	0	0	0	0	0	0
Kigezi	5	0	26,000,000	0	0	0	0	0	0	0	0	0
Lango	40	110	20,000,000	0	0	0	0	0	0	0	0	0
Rwenzori	221	235	45,000,000	0	3	0	0	0	0	6	0	150,000,000
West Nile	4	8	9,500,000	0	0	0	0	0	0	1	0	20,000,000
Total	348	402	143,500,000	47	28	28,600,000	0	0	0	23	16	289,000,000

5.8.3 Extent of damage by type of disaster to Culverts

The assessment also involved analysis of hazard impact on culverts including circular steel, box concrete, round pipe steel, and concrete pipe with estimated economic loss for 2021 and 2022. Results in Table 67 generally showed that in 2021 and 2022, 3,755 and 14,012 pipe concrete culverts were the most completely damaged respectively followed by round pipe steel culverts in both years. However, in 2021 & 2022, box concrete culverts registered the highest amount of economic losses at 1.04 and 35 billion shillings respectively. Table 67 below has further details.

Table 67. Extent of damage to Culverts and estimated economic loss by year

Category of culvert	2021		2022	
	Completely destroyed	Estimate Loss in UGX	Completely destroyed	Estimate Loss in UGX
Circular Steel	93	253,330,000	69	202,750,000
Box Concrete	60	1,046,800,000	145	35,082,050,000
Round pipe steel	165	15,405,000	334	517,450,000
Pipe Concrete	3,755	75,640,620	14,012	14,714,736,600
Total	4,073	1,391,175,620	14,560	50,516,986,600

5.8.4 Extent of damage caused by type of hazard to culverts during 2021 and 2022

The assessment results in table 68 reveal that floods, landslides and hailstorm wind caused the greatest damage on culverts in 2021., Concrete type of culverts were the most damaged with 3,755 concrete pipe culverts followed by round pipe steel (165), and circular steel (93). Heavy rain, wind and hails storms recorded the largest damages to culverts followed by landslides with pipe concrete culverts the most affected in 2021.

Table 68. Extent of damage caused by type of hazard to culverts in 2021

Type of Disaster / Emergency that occurred	Circular Steel		Box Concrete		Round Pipe Steel		Pipe Concrete		Total	Estimated Loss on Culverts
	Destroyed	Estimated Loss	Destroyed	Estimated Loss	Destroyed	Estimated Loss	Destroyed	Estimated Loss	Culverts destroyed	
Floods	69	202,750,000	91	34,239,550,000	190	314,950,000	12,708	10,034,736,600	13,058	46,616,736,600
Landslides	-	-	52	42,500,000	74	132,500,000	614	3,700,000,000	740	3,875,000,000
Hail/Wind storm	-	-	2	800,000,000	70	70,000,000	-	-	72	870,000,000
Other	-	-	-	-	-	-	690	980,000,000	690	980,000,000
Total	69	202,750,000	145	35,082,050,000	334	517,450,000	14,012	14,714,736,600	14,560	52,341,736,600

Table 69 below, shows that in 2022, floods, landslides, and hailstorms continued to damage culverts. In particular, floods destroyed a total of 13,058 culverts with majority of these being 12,708 pipe concrete culverts. Landslides destroyed 740 concrete and just like floods pipe concrete culverts contributed the biggest number of the type of culvert most affected. The table below provides a breakdown of the damages to the different types of culverts by the different hazards.

Table 69. Extent of damage caused by type of hazards to culverts in 2022

Type of Disaster / Emergency that occurred	Circular Steel		Box Concrete		Round Pipe Steel		Pipe Concrete		Total	Estimated Loss on Culverts
	Destroyed	Estimated Loss	Destroyed	Estimated Loss	Destroyed	Estimated Loss	Destroyed	Estimated Loss	Culverts destroyed	
Floods	69	202,750,000	91	34,239,550,000	190	314,950,000	12,708	10,034,736,600	13,058	46,616,736,600
Landslides	-	-	52	42,500,000	74	132,500,000	614	3,700,000,000	740	3,875,000,000
Hail/Wind storm	-	-	2	800,000,000	70	70,000,000	-	-	72	870,000,000
Other	-	-	-	-	-	-	690	980,000,000	690	980,000,000
Total	69	202,750,000	145	35,082,050,000	334	517,450,000	14,012	14,714,736,600	14,560	52,341,736,600

In terms of regional distribution of hazard impacts on culverts the results in Table 70; show that in 2021, West Nile sub region experienced the largest number of damaged culverts (1,282) followed by Teso (649), then Acholi (634). Ankole, Bukedi and Kigezi were the only sub regions to register damages and economic losses in all categories of culverts. The largest economic losses were recorded by Busoga sub region followed by Acholi and West Nile.

Table 70. Extent of damage to Culverts by region in 2021.

Sub Region	Circular Steel		Box Concrete		Round Pipe Steel		Pipe Concrete		Total	
	Destroyed	Estimated Loss	Destroyed	Estimated Loss	Destroyed	Estimated Loss	Destroyed	Estimated Loss	Culverts destroyed	Estimated Loss on Culverts
Acholi	-	-	10	4,650,000,000	32	410,000,000	592	1,197,000,000	634	6,257,000,000
Ankole	2	25,000,000	6	800,000,000	95	264,500,000	333	1,115,000,000	436	2,204,500,000
Buganda South	-	-	1	25,000,000	-	-	50	10,000,000	51	35,000,000
Bukedi	48	900,000,000	1	150,000,000	8	200,000,000	279	210,600,000	336	1,460,600,000
Bunyoro	-	-	-	-	-	-	6	30,000,000	6	30,000,000
Busoga	23	23,000,000,000	17	115,000,000	-	-	145	310,000,000	185	23,425,000,000
Karamoja	2	8,000,000	3	128,000,000	-	-	34	79,057,000	39	215,057,000
Kigezi	14	500,000,000	9	300,000,000	10	160,000,000	50	330,000,000	83	1,290,000,000
Lango	-	-	7	2,800,000,000	5	6,000,000	160	165,000,000	172	2,971,000,000
Rwenzori	1	400,000,000	-	-	14	28,000,000	185	85,000,000	200	513,000,000
Teso	-	-	-	-	1	500,000,000	648	1,161,462,000	649	1,661,462,000
West Nile	3	500,000,000	6	1,500,000,000	-	-	1,273	2,960,000,000	1,282	4,960,000,000
Total	93	25,333,000,000	60	10,468,000,000	165	1,568,500,000	3,755	7,653,119,000	4,073	45,022,619,000

Regional trend for 2022 indicates that the biggest damage on all types of culverts was from Rwenzori sub region (11,466), followed by West Nile (1009), Acholi (813), Ankole (386) and Bukedi (333) as shown in table 71 below. Additionally, the largest economic losses were suffered by Rwenzori, Acholi and Teso sub regions with the table showing destruction by category of culvert.

Table 71. Extent of damage to Culverts by region in 2022.

Sub Region	Circular Steel		Box Concrete		Round Pipe Steel		Pipe Concrete		Total	
	Destroyed	Estimated Loss	Destroyed	Estimated Loss	Destroyed	Estimated Loss	Destroyed	Estimated Loss	Culverts destroyed	Estimated Loss on Culverts
Acholi	0	0	15	6,000,000,000	48	480,000,000	750	1,300,000,000	813	7,780,000,000
Ankole	10	120,000,000	6	700,000,000	130	595,000,000	240	720,000,000	386	2,135,000,000
Buganda North	0	0	0	0	1	200,000	126	360,000	127	2,360,000
Bukedi	0	0	1	150,000,000	56	1,100,000,000	276	207,600,000	333	1,457,600,000
Bunyoro	0	0	0	0	0	0	0	0	-	-
Busoga	0	0	5	100,000,000	0	0	50	500,000,000	55	600,000,000
Elgon	15	37,500,000	0	0	0	0	0	0	15	37,500,000
Karamoja	0	0	0	0	0	0	0	0	-	-
Kigezi	38	620,000,000	1	30,000,000	0	0	108	789,600,000	147	1,439,600,000
Lango	0	0	2	800,000,000	70	70,000,000	0	0	72	870,000,000
Rwenzori	0	0	110	425,000,000	22	4,900,000,000	11,334	3,261,000,000	11,466	8,586,000,000
Teso	0	0	5	3,500,000,000	7	500,000,000	125	1,140,020,460	137	5,140,020,460
West Nile	6	1,250,000,000	0	0	0	0	1,003	1,800,000,000	1,009	3,050,000,000
Total	69	2,027,500,000	145	11,705,000,000	334	7,647,000,000	14,012	9,718,580,460	14,560	31,098,080,460

5.9 Impact of Hazards on the Energy subsector

5.9.1 Extent of Damage / Loss to Energy & Minerals Subsector

An assessment of the extent of damage from different hazards on the energy sub sector was conducted comprising of disaster damage on energy points such as power lines, number of affected mines in the mineral sub sector, number of miners unemployed and the estimated loss of disaster in the energy sub sector in 2021/2022.

Findings on the overall effect of hazards on the energy sector reveal that in 2021, respondents indicated that disaster occurrence affected 18 percent of the energy sector in their respective districts. The most affected sub regions included West Nile (71%), followed by Buganda South (67%) and Bukedi (43%), as indicated in Table 72 below. While in 2022, hazard impacts on the energy sector reduced to 16 percent and the most affected regions were Buganda South (40%), West Nile (38%) and Rwenzori (36%) among others.

A comprehensive assessment of the energy and mineral sector as per Table 72 indicates that in 2021, a total of 1,113 energy points were destroyed, translating to an estimated total loss of 11 billion Uganda shillings and an estimated loss of 981 million Uganda shillings to the mineral sub sector. In addition, a total of 3,238 miners were left unemployed due to the above stated extent of damage by disaster in 2021. Overall, the sector suffered significant damage that led to an estimated economic loss of 12 billion Uganda shillings to both energy and mineral sub sectors in 2021.

Further analysis, reveals that in 2021, hail/wind storm had the greatest damage on energy points (745 points – contributing 66.9% of energy loss) with a significantly high estimated loss of 1.8 billion Uganda shillings. This was followed by lightning (258 points –contributing 23.2% of energy loss) with estimated loss of 2.1 billion Uganda shillings, almost 1.5 times higher than loss attributed to hailstorms.

The mineral sub sector also suffered damages to hail/windstorm with estimated loss of 600 million Uganda shillings, followed by epidemic, that caused an estimated loss of 185 million Uganda shillings.

Table 72. Extent of Damage / Loss in Energy & Minerals Subsector by Hazard Type in 2021

Type of Hazards	Energy Sub sector		Minerals Sub sector	Total Loss in UGX	Miners Unemployed
	Energy Points Damaged	Estimated Damage in UGX	Estimated Loss in UGX		
Floods	64	3,011,000,000	59,000,000	3,070,000,000	666
Drought	2	530,000,000	0	530,000,000	0
Prolonged dry spells	10	2,650,000,000	0	2,650,000,000	0
Landslides	5	10,000,000	17,000,000	27,000,000	100
Hail/Wind storm	745	1,855,100,000	600,520,000	2,455,620,000	532
Epidemic	12	330,000,000	185,000,000	515,000,000	820
Lightning	258	2,118,000,000	35,000,000	2,153,000,000	500
Pandemic	6	80,000,000	50,000,000	130,000,000	120
Conflict	2	150,000,000	0	150,000,000	0
Pests & Diseases	6	700,000,000	35,000,000	735,000,000	500
Total	1,110	11,434,100,000	981,520,000	12,415,620,000	3,238

Findings from Table 73 show that in 2022, a total of 8,404 energy points were destroyed, translating to an estimated total loss of 5 billion Uganda shillings i.e.53.5% less than in the year 2021 although the energy points damaged were higher in 2022 by 662.5% than in 2021. An estimated loss of 296 million Uganda shillings to the mineral sub sector was realized in 2022, i.e. 69.7% lower than that in 2021. In addition, a total of 6,171 miners were left un employed due to the above extent of damage caused by disaster in 2022, an increment of 91% from 2021 to 2022. Overall results on the extent of damage to energy and mineral sector indicated that the sector suffered an estimated total loss of 5 billion Uganda shillings in 2022, i.e. 54.8% lower than in the year 2021.

Also, further analysis reveals that in 2022, prolonged dry spells caused the greatest damage to the energy points (8009, contributing to 4.4% of energy loss) with estimated loss of 132 million Uganda shillings, followed by floods (124 points) with estimated loss of 876 million Uganda shillings, landslides (86 points) with estimated loss of 68 million shillings. While in mineral sub sector, was mostly affected by pandemic with the biggest loss of 1.6 billion Uganda shillings, followed by hailstorm with an estimated loss of 1.1 billion Uganda shillings. Please see Table 73 for details.

Table 73. Extent of Damage / Loss in Energy & Minerals Subsector by Hazard Type 2022

Type of Hazards	Energy Sub sector		Minerals Sub sector	Total Loss in UGX	Miners Unemployed
	Energy Points Damaged	Estimated Damage in UGX	Estimated Loss in UGX		
Floods	124	876,000,000	107,000,000	983,000,000	2,318
Drought	2	125,000,000	0	125,000,000	0
Prolonged dry spells	8,009	132,000,000	0	132,000,000	0
Landslides	86	68,000,000	20,000,000	88,000,000	80
Hail/Wind storm	061	1,118,900,000	14,000,000	1,132,900,000	33
Epidemic	6	80,000,000	5,000,000	85,000,000	120
Lightning	63	225,750,000	50,000,000	275,750,000	1,500
Pandemic	13	1,580,000,000	80,000,000	1,660,000,000	1,320
Conflict	21	122,400,000	20,000,000	142,400,000	800
Pests & Diseases	7	510,000,000	0	510,000,000	0
Other	12	250,100,000	0	250,100,000	0
Total	8,404	5,088,150,000	296,000,000	5,384,150,000	6,171

Regional distribution of the overall extent of damage to both energy points and mineral sub sector in 2021 as per table 74 below, it shows that West Nile had the biggest estimated loss of 6 billion, followed by Acholi with estimated loss of 2 billion shillings. Specifically, hazards had the greatest damage to energy points in Kigezi (263 points) with estimated loss of 910 million shillings, followed by West Nile (56 points) with estimated loss of 6.1 billion shillings. While the biggest loss to mineral sector was in West Nile with estimated loss of 175 million shillings. Please see table 74 below for details.

Table 74. Extent of Damage / Loss in Energy & Minerals Subsector by Sub region in 2021

Sub Region	Energy Sub sector		Minerals Sub sector	Total Loss in UGX	Miners Unemployed
	Energy Points Damaged	Estimated Damage in UGX	Estimated Loss in UGX		
Acholi	45	1,920,000,000	108,000,000	2,028,000,000	360
Ankole	3	45,000,000	25,000,000	70,000,000	170
Buganda South	13	331,000,000	100,000,000	431,000,000	200
Bukedi	10	29,000,000	0	29,000,000	0
Karamoja	0	0	0	0	0
Kigezi	263	910,300,000	0	910,300,000	0
Lango	0	0	0	0	0
Rwenzori	7	40,000,000	10,000,000	50,000,000	8
Teso	31	24,800,000	0	24,800,000	0
West Nile	56	6,154,000,000	175,000,000	6,329,000,000	2,500
Total	428	9,454,100,000	418,000,000	9,872,100,000	3,238

Table 75. Extent of Damage / Loss in Energy & Minerals Subsector by Sub region in 2022

Sub Region	Energy Sub sector		Minerals Sub sector	Total Loss in UGX	Miners Unemployed
	Energy Points Damaged	Estimated Damage in UGX	Estimated Loss in UGX		
Acholi	45	874,000,000	123,000,000	997,000,000	2,760
Ankole	2	270,000,000	40,000,000	310,000,000	400
Buganda South	13	170,000,000	0	170,000,000	0
Bukedi	10	3,000,000	0	3,000,000	0
Bunyoro	1	8,500,000	0	8,500,000	0
Kigezi	66	56,250,000	8,000,000	64,250,000	0
Lango	8,012	281,900,000	0	281,900,000	0
Rwenzori	275	138,500,000	25,000,000	163,500,000	11
West Nile	63	3,616,000,000	100,000,000	3,716,000,000	3,000
Total	8,487	5,418,150,000	296,000,000	5,714,150,000	6,171

5.9.2 Extent of Damage / Loss in Energy & Minerals Subsector by hazard type in 2021/2022

The ASDR 2021/2022 indicates the extent of damage caused by different types of disasters to solar points, powerlines, fuel stations, Biogas plants, affected mines and the total estimated damage to the energy and mines sub sectors. Table 76 below shows that in 2021, a total of 824 solar points were damaged by hazards, the biggest damage was caused by landslide (594 points) followed by lightning (201). A total of 228 power lines were damaged by hazards and most of the damage was caused by hailstorm (141 lines) followed by lightning (56 points). A total of 26 fuel stations were damaged and most of the damage was caused by floods (7 stations) while a total of 29 biogas plants were damaged and the biggest damage was caused by floods (25 plants).

Table 76. Extent of Damage / Loss in Energy & Minerals Subsector by Hazard Type in 2021

Type of Hazard that occurred	No of Solar Points Damaged	No of Power Lines Damaged	No Of Fuel Stations Damaged	No Of Biogas Plants Damaged	No Of Thermal Plants Damaged	Total No Energy Points Damaged	Estimated Damaged in UGX To Energy Sub sector	No Of Mines Affected by Disaster	Estimated Loss in UGX To Minerals Sub sector	Total Loss in UGX to Energy and Minerals Subsector	No of Miners Unemployed
Floods	19	11	7	25	0	64	3,011,000,000	5	59,000,000	30,700,000	666
Drought	0	2	0	0	0	2	530,000,000	0	0	530,000,000	0
Prolonged dry spells	2	3	1	4	0	10	2,650,000,000	0	0	2,650,000,000	0
Landslides	2	3	0	0	0	5	10,000,000	2	17,000,000	27,000,000	100
Hail/Wind storm	594	141	9	0	1	745	1,855,100,000	2	600,520,000	2,455,620,000	532
Epidemic	3	5	4	0	0	12	330,000,000	7	185,000,000	515,000,000	820
Lightning	201	56	1	0	0	258	2,118,000,000	1	35,000,000	2,153,000,000	500
Pandemic	1	2	3	0	0	6	80,000,000	4	50,000,000	130,000,000	120
Conflict	0	2	0	0	0	2	150,000,000	0	0	150,000,000	0
Pests & Diseases	2	3	1	0	0	6	700,000,000	1	35,000,000	735,000,000	500
Total	824	228	26	29	1	1,110	11,434,100,000	22	981,520,000	9,376,320,000	3,238

Conversely, Table 77 shows that in 2022, a total of 5,090 solar points were damaged by hazards i.e.517% higher than in 2021, and the biggest damage was caused by prolonged dry spell (5,004 points) followed by conflict (18). A total of 3,285 power lines (1363.9%, 14 times higher than the loss in the year 2021) were damaged by hazards and the greatest damage was caused by hailstorm (3,001 lines) followed by landslides (84 points). A total of 24 fuel stations were damaged by disaster and the biggest damage was caused by hailstorm/wind.

A total of 2 biogas plants were damaged and most of the damage was caused by prolonged dry spells (2 plants).

Table 77. Extent of Damage / Loss in Energy & Minerals Subsector by Hazard Type in 2022

Type of Hazard that occurred	No of Solar Points Damaged	No of Power Lines Damaged	No Of Fuel Stations Damaged	No Of Biogas Plants Damaged	No Of Thermal Plants Damaged	Total No Energy Points Damaged	Estimated Damaged in UGX to Energy Sub sector	No Of Mines Affected by Disaster	Estimated Loss in UGX To Minerals Sub sector	Total Loss in UGX to Energy and Minerals Subsector	No of Miners Unemployed
Floods	26	95	3	0	0	124	876,000,000	26	107,000,000	983,000,000	2,318
Drought	0	2	0	0	0	2	125,000,000	0	0	125,000,000	0
Prolonged dry spells	5,004	3,001	2	2	0	8,009	132,000,000	0	0	132,000,000	0
Landslides	2	84	0	0	0	86	68,000,000	2	20,000,000	88,000,000	80
Hail/Wind storm	10	43	5	0	3	61	1,118,900,000	2	14,000,000	1,132,900,000	33
Epidemic	1	2	3	0	0	6	80,000,000	4	5,000,000	85,000,000	120
Lightning	8	53	2	0	0	63	225,750,000	1	50,000,000	275,750,000	1,500
Pandemic	5	3	5	0	0	13	1,580,000,000	64	80,000,000	1,660,000,000	1,320
Conflict	18	1	2	0	0	21	122,400,000	40	20,000,000	142,400,000	800
Pests & Diseases	4	1	2	0	0	7	510,000,000	0	0	510,000,000	0

5.9.3 Extent of Damage / Loss to Energy & Minerals Subsector by sub region in 2021/2022

In 2021, regional assessment of the extent of damage by hazard to the mineral and energy sub sector and estimated loss reveals that, Acholi, Busoga, Kigezi, West Nile, Teso, South Buganda, Ankole and Bukedi were the most affected regions across the energy and mineral sector (See Table 78 below).

The results reveal that in 2021, Busoga had the biggest damage to solar points (587) and power lines (98) with its total estimated economic loss to energy of 50,000,000, while Acholi had the biggest damage to fuel stations with its total estimated economic loss of 1,920,000,000 shillings, Teso had the biggest damage to biogas plants (25) with its total estimated energy loss estimated at about 24,800,000. The biggest damage to mines was in Acholi (12 mines) with estimated cost of 108,000,000 shillings.

Please see table 78 for details.

Table 78. Extent of Damage / Loss in Energy & Minerals Subsector by Sub region in 2021

Sub region	No of Solar Points Damaged	No of Power Lines Damaged	No Of Fuel Stations Damaged	No Of Biogas Plants Damaged	No Of Thermal Plants Damaged	Total No Energy Points Damaged	Estimated Damaged in UGX To Energy Sub sector	No Of Mines Affected by Disaster	Estimated Loss in UGX To Minerals Sub sector	Total Loss in UGX to Energy and Minerals Subsector	No of Miners Unemployed
Acholi	10	26	9	0	0	45	1,920,000,000	12	108,000,000	2,028,000,000	360
Ankole	1	1	0	0	1	3	45,000,000	2	25,000,000	70,000,000	170
Buganda South	2	4	3	4	0	13	331,000,000	2	100,000,000	431,000,000	200
Bukedi	2	4	4	0	0	10	29,000,000	0	0	29,000,000	0
Busoga	587	98	0	0	0	685	50,000,000	0	563,520,000	613,520,000	0
Elgon	0	0	0	0	0	0	0	0	0	0	0
Karamoja	0	0	0	0	0	0	500,000,000	0	0	500,000,000	0
Kigezi	194	69	0	0	0	263	910,300,000	0	0	910,300,000	0
Rwenzori	3	0	4	0	0	7	40,000,000	1	10,000,000	50,000,000	8
Teso	0	6	0	25	0	31	24,800,000	0	0	24,800,000	0
West Nile	26	22	6	0	0	56	6,154,000,000	5	175,000,000	6,329,000,064	2,500
Total	825	230	26	29	1	1,113	10,004,100,000	22	981,520,000	10,985,620,064	3,238

In 2022, regional assessment of disaster in the mineral/ energy sub sectors and estimated loss reveals that, Lango, Rwenzori, Acholi, West Nile, Buganda South, Karamoja and Bukedi were the most affected regions across the energy and mineral sector.

Table 79 indicates that in 2022, Lango had the biggest damage to solar points (5000) and power lines (3012) with its total estimated damage to energy of 281,900,000, while West Nile had the biggest damage to fuel stations with its total estimated economic loss of 3,616,000,000 shillings. Acholi had the biggest damage to mines (132 mines) with estimated cost of 123,000,000 shillings.

Please see table 79 below for details.

Table 79. Extent of Damage / Loss in Energy & Minerals Subsector by Sub region in 2022

Sub Region	No of Solar Points Damaged	No of Power Lines Damaged	No Of Fuel Stations Damaged	No Of Biogas Plants Damaged	No Of Thermal Plants Damaged	Total No Energy Points Damaged	Estimated Damaged in UGX To Energy Sub sector	No Of Mines Affected by Disaster	Estimated Loss in UGX To Minerals Sub sector	Total Loss in UGX to Energy and Minerals Subsector	No of Miners Unemployed
Acholi	14	22	9	0	0	45	874,000,000	132	123,000,000	997,000,000	2,760
Ankole	1	1	0	0	0	2	270,000,000	3	40,000,000	310,000,000	400
Buganda South	2	9	1	1	0	13	170,000,000	0	0	170,000,000	0
Bukedi	2	7	0	1	0	10	3,000,000	0	0	3,000,000	0
Bunyoro	1	0	0	0	0	1	8,500,000	0	0	8,500,000	0
Kigezi	0	66	0	0	0	66	56,250,000	0	8,000,000	64,250,000	0
Lango	5,000	3,012	0	0	0	8,012	281,900,000	0	0	281,900,000	0
Rwenzori	29	243	0	0	3	275	138,500,000	2	25,000,000	163,500,000	11
West Nile	42	7	14	0	0	63	3,616,000,000	2	100,000,000	3,716,000,000	3,000
Total	5,091	3,367	24	2	3	8,487	5,418,150,000	139	296,000,000	5,714,150,000	6,171

5.10 Impact of Hazards on the Health Sector

5.10.1 Public Health Emergencies (PHEs)

Health sector disaster analysis focused on public health emergencies (PHEs) and human deaths during the 2021-2022 period as well as hazard impacts on the health sector by type of hazard and region. The results (Table 80) show that the country experience 13 public health emergencies leading to 3,029 deaths in 2021 and 403 deaths in 2022, indicating a reduction in cases between the two years. In 2021, COVID19 and Crimean Congo Hemorrhagic Fever were the highest contributors to death followed by Rift Valley Fever, anthrax and yellow fever while in 2022, COVID19 (335) and Ebola (55) contributed to the most deaths.

In terms of prevalence, COVID19 had the biggest number of registered cases in both 2021 (140,737) and 2022 (169,985) followed by malaria outbreak (36,817), Brucellosis (210), Ebola (164), Anthrax (140) and poisoning (76). The least public health emergency cases were registered from measles (8), followed by yellow fever (28), Rift Valley fever (42), Monkey pox (41) and the Crimean Congo Hemorrhagic Fever (67). 17 other cases were attributed to an undiagnosed illness.

Regionally, the central region majorly registered more cases of Brucellosis (210) followed by the Crimean Congo Hemorrhagic Fever (49), Yellow fever (25) and 17 undiagnosed illness while Rift valley fever had only one case registered. Northwestern region experienced the largest number of Anthrax cases (57) followed by Methanol poisoning (29) while yellow fever (2) had the least number of cases. In western Uganda, PHEs were mainly attributed to cyanide poisoning (39) and Rift valley fever (35) having the largest number of cases for the latter and the least was a case of yellow fever. 44 cases of Anthrax and 6 cases of rift valley fever were registered in south-western while Northern region reported the only cases of Measles (8) and three cases of Crimean Congo Hemorrhagic Fever.

All reported cases of malaria (36,817) were from eastern Uganda implying they had gone beyond the thresholds of the affected districts). Other PHEs registered in the eastern region include Anthrax (39), Crimean Congo Hemorrhagic Fever (15) and food poisoning (8).

Generally, eastern region reported cases of malaria, central region experienced more cases of Brucellosis, the North western region registered more cases of Anthrax, western dominated cases of Rift valley fever and cyanide poisoning, northern region registered more cases of meals. Although monkey pox, Crimean Congo Hemorrhagic Fever and rift valley fever had few registered cases in the country, they posed a high risk and thus a major public health concern. See table 80 for details.

Table 80. Public Health Emergencies 2021 - 2022

Region	Central		North Western		Western		South West		Northern		Eastern		Total		Death 2021	Death 2022
	2021	2022	2021	2022	2021	2022	2021	2022	2021	2022	2021	2022	2021	2022		
	Yellow fever	-	25	-	2	-	1	-	-	-	-	-	-	-	28	-
Suspected methanol Poisoning	-	-	-	29	-	-	-	-	-	-	-	-	-	29	-	-
Suspected Food Poisoning	-	-	-	-	-	-	-	-	-	-	8	-	-	8	-	-
Suspected Cyanide poisoning	-	-	-	-	-	39	-	-	-	-	-	-	-	39	-	-
Rift Valley Fever	-	1	-	-	-	35	-	6	-	-	-	-	-	42	-	3
Monkey-pox Virus	-	-	-	-	-	-	-	-	-	-	-	-	-	41	-	-
Measles	-	-	-	-	-	-	-	-	-	8	-	-	-	8	-	-
Malaria Outbreak	-	-	-	-	-	-	-	-	-	-	36,817	-	-	36,817	-	1
Crimean Congo Hemorrhagic Fever	-	49	-	-	-	-	-	-	-	3	15	-	-	67	-	6
COVID19 Pandemic	-	-	-	-	-	-	-	-	-	-	-	-	-	169,985	3,029	335
Brucellosis	-	210	-	-	-	-	-	-	-	-	-	-	-	210	-	-
Anthrax	-	-	-	57	-	-	-	44	-	-	39	-	-	140	-	3
Ebola virus	-	-	-	-	-	-	-	-	-	-	-	-	-	164	-	55
Undiagnosed illness	-	17	-	-	-	-	-	-	-	-	-	-	-	17	-	-
Total	0	302	0	88	0	75	0	50	11	0	36,879	0	170,149	3,029	403	

5.10.2 Impact of Hazards on the Health Sector by year and region

The results reveal under Table 81 that the Health sub sector was largely affected by floods and landslides with Rwenzori sub region suffering the most damages and economic loss. Rwenzori sub region had 4 health center III's reported to have been affected by landslides and floods followed by Lango sub region with 3 health center III's that needed to be relocated due to floods. The total economic cost suffered by the Health sector was estimated at Ugx 5,350,000,000.

According to Figure 11, in 2021, pandemics followed by drought, conflict, epidemic and floods had the most significant impact on the health sector while lightening, dry spells, hail/wind storm, and Pests & Diseases had the least impact on the sector. In 2022, more significant health sector disasters were attributed to earthquakes followed by Pandemics, and drought. The least effects were attributed to Pests & Diseases, conflicts, landslides, hail/wind storms, epidemic, prolonged dry spells, and floods. Lightning and other hazards had moderate impact on the health sector. The results reveal an increase in health sector hazard impacts between 2021 and 2022 largely due to earthquakes, Pandemics, and drought.

Regionally, in 2021 Bukedi sub region experienced more significant health sector disasters followed by Buganda South, Rwenzori, Buganda North and Lango sub regions. The least impacts were registered in Bunyoro sub region followed Karamoja, Teso and Kigezi. The Acholi, Ankole, Busoga and Elgon sub regions never registered any case of health sector disaster impacts in 2021. In 2022, the largest health sector disasters were experienced in Buganda south, followed by West Nile, Bukedi, Bunyoro, Lango, Karamoja, and North Buganda. Rwenzori, Teso, and Ankole sub regions experienced moderate health sector disasters while the least impact accrued to Kigezi, Elgon, and Busoga sub regions (see Figure 12 for further details).

Table 81. Hazard Impact on the health sector by year and region

SN.	District	2021	2022	Cost	Facility
1	Rwenzori	4	4	1,200,000,000	Kilembe mines hospital
				800,000,000	Karusandara HC III
				400,000,000	Kanamba HC III
				900,000,000	Rwangara HC III
2	Lango	3	3	350,000,000	Kangai HC III
				800,000,000	Two health centers in Amolator district
3	Buganda North	1	1	900,000,000	Lwampanga HC III
	Total	8		5,350,000,000	

Figure 11. Health sector impact by type of hazard

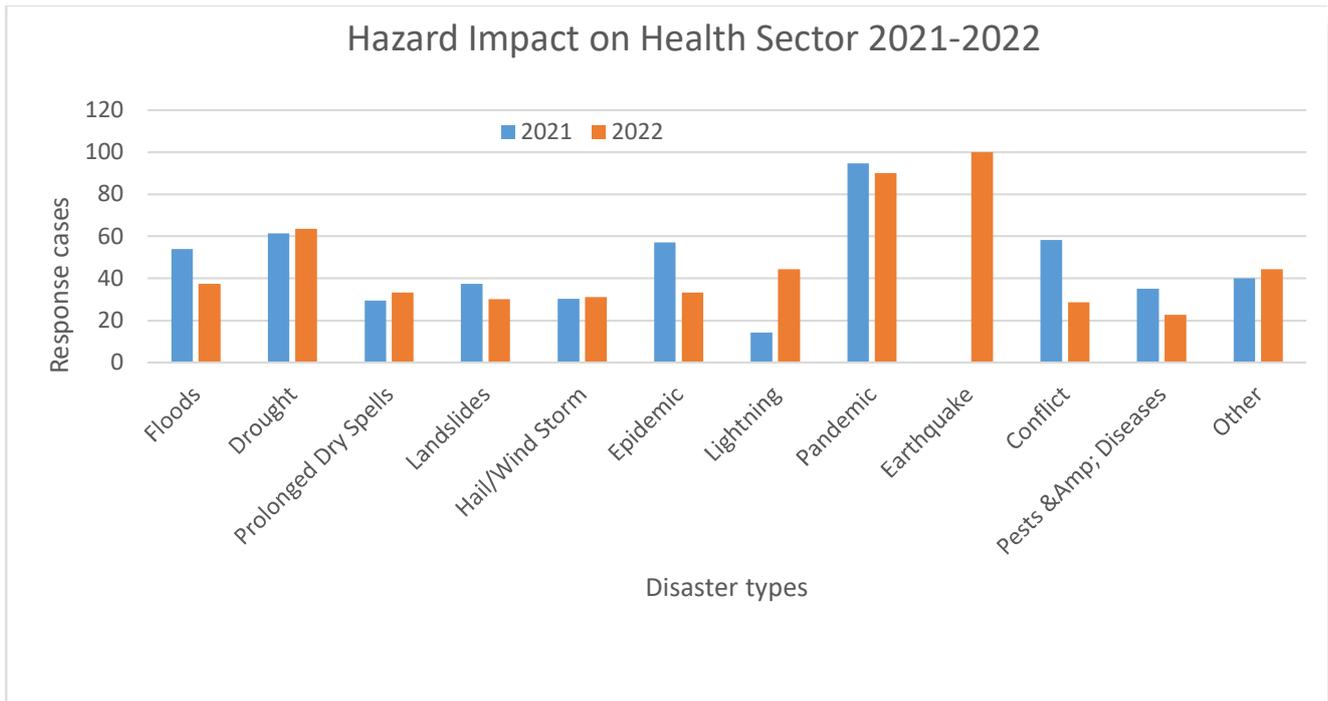
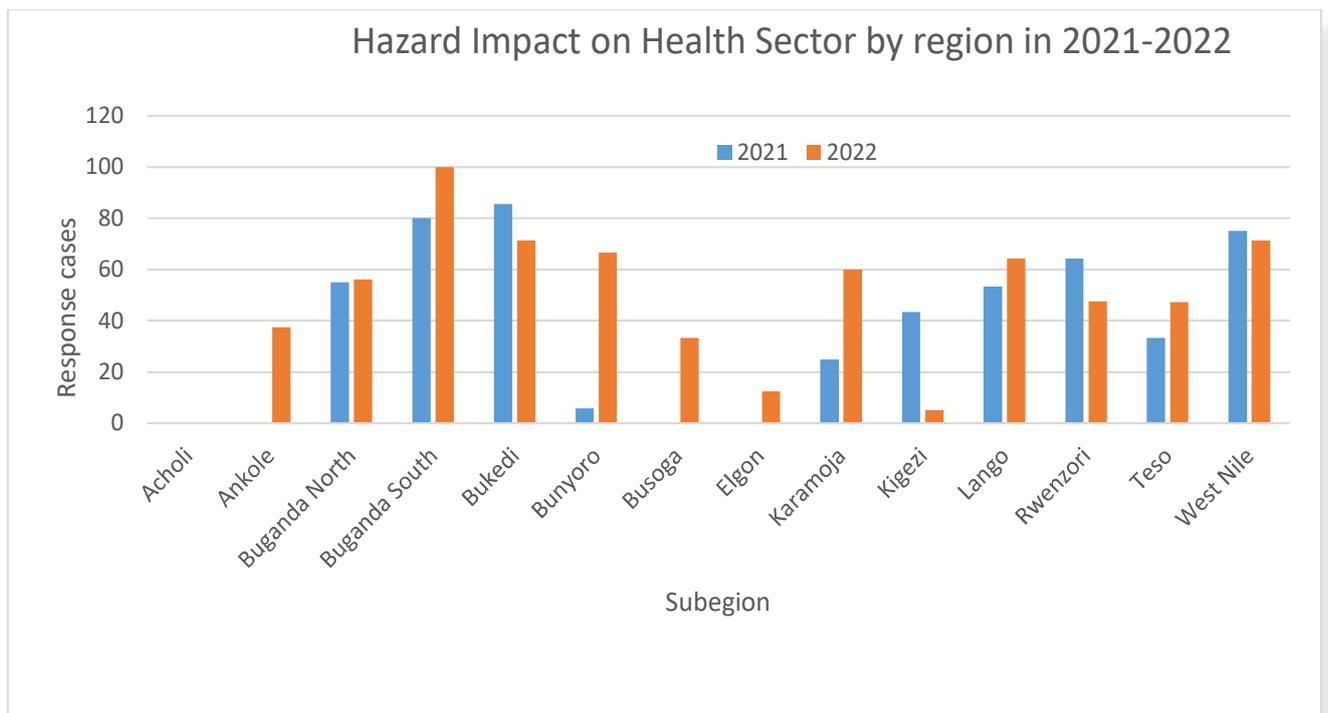


Figure 12. Health sector impacts by region



5.11 Impact of Hazards on Environment

5.11.1 Impact of Hazards on Environment by type, year, and region

The disasters that significantly impacted on environment in 2021 included drought, followed by landslides, dry spells and floods. The disasters with the least effect were pandemics, conflict, pests and diseases, and hail/wind storms. The environment sector never reported cases of hazard impact from epidemics, lightning and earthquakes. In 2022, most significant environment disaster impacts accrued from drought, followed by floods, prolonged dry spells and landslides.

The least impacts accrued from pandemics, epidemics, pests & diseases. Conflicts and hail/wind storms had a moderate impact on the environment (See Table 82, Figure 13).

Table 82. Hazard impact on environment by type and region

Type of Disaster	2021	2022	Region	2021	2022
Floods	57.69	75	Acholi	0	0
Drought	76.92	90.91	Ankole	12.5	21.43
Prolonged Dry Spells	70.59	62.5	Buganda North	37.5	55
Landslides	75	50	Buganda South	55.56	60
Hail/Wind Storm	39.13	43.75	Bukedi	57.14	85.71
Epidemic	0	16.67	Bunyoro	58.33	41.18
Lightning	0	0	Busoga	16.67	33.33
Pandemic	10.53	10	Elgon	75	78.57
Earthquake	0	0	Karamoja	30	37.5
Conflict	33.33	42.86	Kigezi	15.79	26.09
Pests & Diseases	35	31.82	Lango	35.71	20
Other	40	55.56	Rwenzori	52.38	57.14
Average	36.52	39.92	Teso	57.89	46.67
			West Nile	85.71	87.5

Regionally, more significant cases of environment sector hazard impacts in 2021 were registered in West Nile, followed by Bunyoro, Teso, Bukedi, and Buganda North sub regions. The least affected regions by environment sector hazard impacts were Ankole, Kigezi, Busoga, Karamoja, Lango, and Buganda North. In 2022, West Nile and Bukedi sub regions had more significant environment sector disasters followed by Elgon, Buganda South, Rwenzori and Buganda North.

The least significant cases were registered in the Lango, Ankole, Kigezi, Busoga, Karamoja sub region while Teso sub region had moderate environment sector disaster impacts (See Figure 14).

Figure 13. Environment sector hazard impacts by type and year

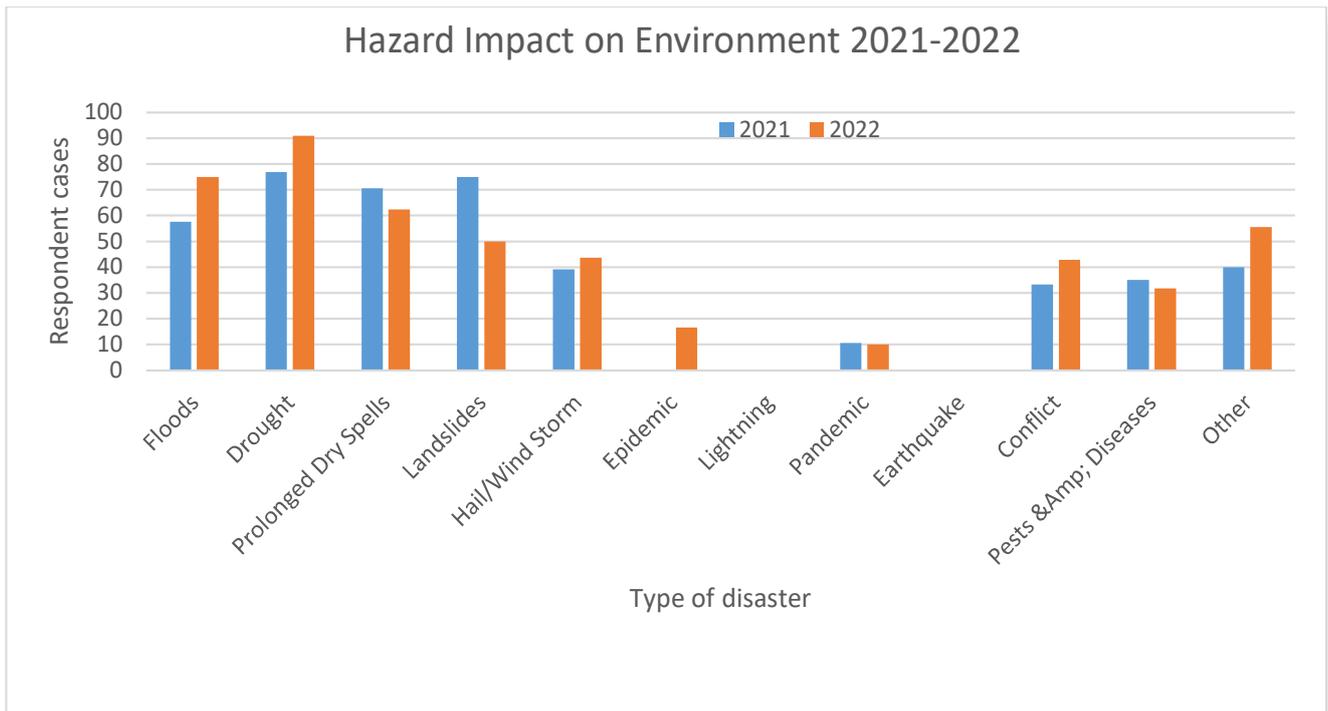
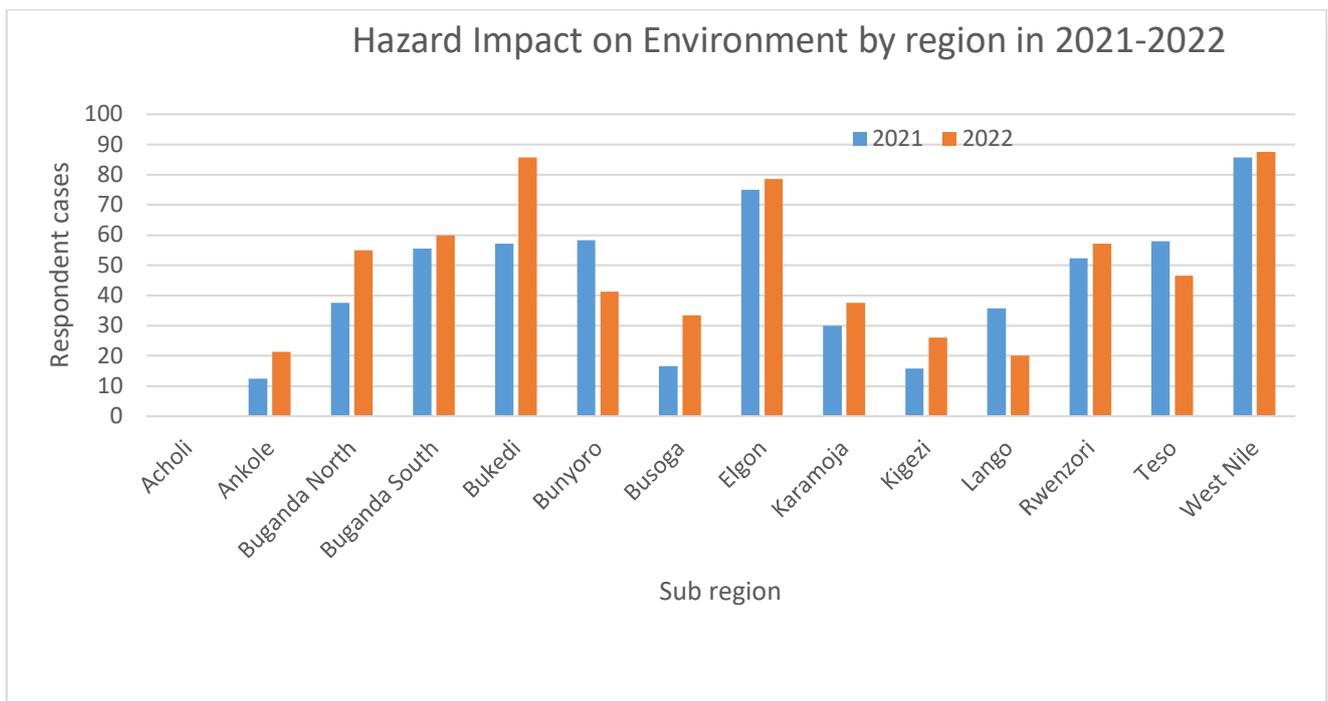


Figure 14. Environment sector hazard impacts by year and region



6. ANALYSIS OF PRE-EXISTING CAPACITY

This chapter presents vital statistics on the existing capacity of Disaster Management at local government level through analyzing the percentage and number of functional District Disaster Management Committees (DDMC), frequency of DDMC meeting in the past 12 months and available evidence of meetings. Other indicators include evidence of available disaster management plans, mainstreaming in the DDP/Sector work plans, availability of multi hazard systems and frequency of sharing disaster risk information.

6.1. Functional District Disaster Management Committees (DDMC's)

The ASDR 2021&2022 results indicate that in 2021, Uganda had approximately 79.2% of districts assessed having available disaster management committees, whereas in 2022, the number of functional committees increased to 91.3% as shown in table 83 below.

Table 83. Functional District Disaster Management Committee

Functional DDMCs	2021		2022	
	%	Number of committees	%	Number of committees
Yes	79.2	38	91.3	42
No	20.8	10	8.7	4
Total	100	48	100	46

Table 84 below on the regional distribution of DDMCs shows majority of the regions had more than 75 percent functional and having sat in 2021 and 2022 (Table 84). Further, results reveal that Bugisu, Teso, Karamoja, Lango, Acholi, Tororo and Ankole sub regions had fully functional DDMC's whereas only Kigezi sub region had the least proportion of functional DDMC's (50%) in 2021. In 2022, the proportion of functional committees increased to 100 percent except for Bukedi (66.7), Bunyoro (66.7) and Kigezi (50%).

Table 84. Functional District Disaster Management Committee by region

Sub Region	2021		Number	2022		Number
	Yes	No		Yes	No	
	%			%		
Buganda South	75	25	4	100	0	4
Buganda North	33.3	66.7	3	100	0	3
Busoga	33.3	66.7	3	100	0	3
Bukedi	66.7	33.3	3	66.7	33.3	3
Bugisu	100	0	4	100	0	4
Teso	100	0	3	100	0	3
Karamoja	100	0	4	100	0	3
Lango	100	0	4	100	0	2
Acholi	100	0	1	100	0	2
West Nile	75	25	4	100	0	4
Bunyoro	66.7	33.3	3	66.7	33.3	3
Tooro	100	0	4	100	0	4
Ankole	100	0	4	100	0	4
Kigezi	50	50	4	50	50	4
Total	79.2	20.8	48	91.3	8.7	46

6.2. Frequency of DDMC meetings during the last twelve months

Figure 15 presents the findings from respondents on how often the DDMC met in the last 12 months. Overall, a total 46 meetings were conducted in 2021 and there was a decrease in meetings conducted in 2022 to 45. Across the two years, quarterly meetings are often conducted. For instance, in 2021, quarterly meetings represented 52 percent, followed by annual meetings 17 percent, monthly meetings were less frequently conducted in 2021. In 2022, quarterly meetings increased to 57 percent and monthly meetings were less frequently conducted in 2022.

There was a 5 percent increase in the number of quarterly meetings between 2021 and 2022.

Figure 15. Frequency of DDMC meeting during the last twelve months

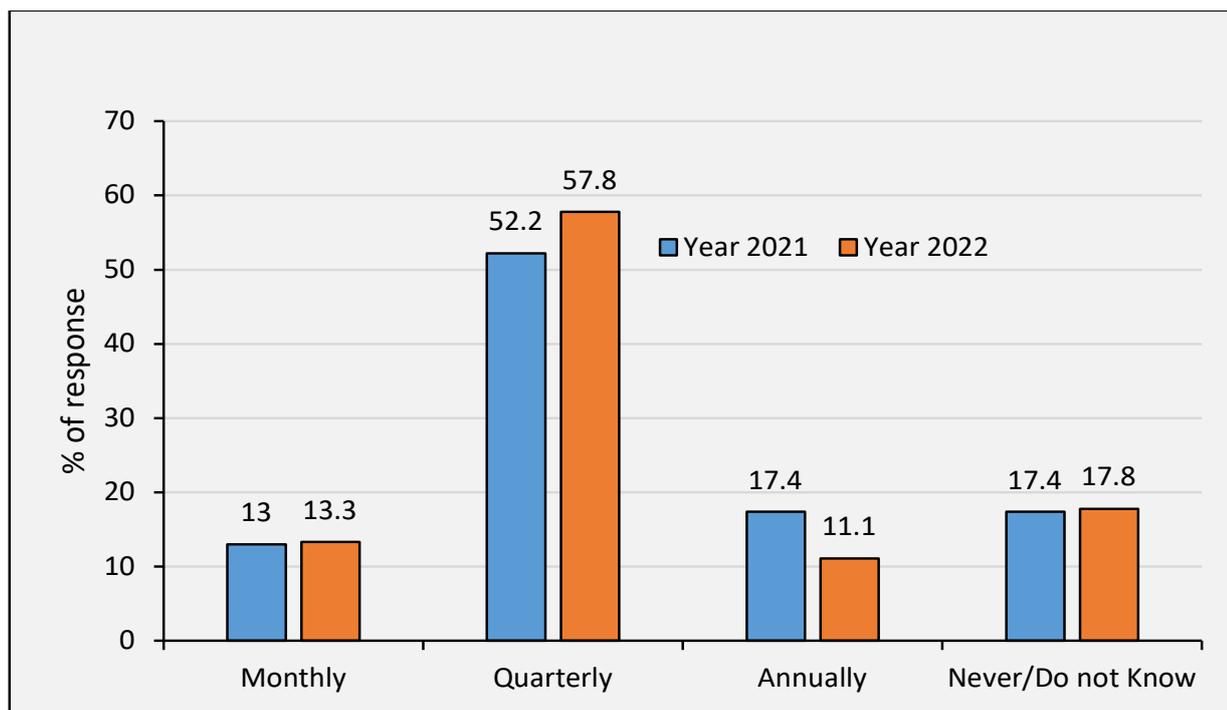


Table 85 below shows the sub region that conducted the most monthly meetings was Karamoja while West Nile conducted 50 percent of DDMC meetings on monthly basis, followed by Tooro 33 percent, and Bugisu 25 percent, majority of sub regions did not conduct monthly meetings in 2021. Busoga, Teso, and Acholi only conducted quarterly meetings and missed out conducting monthly and annual meetings in the past 12 months. 50 percent of the meetings conducted in South Buganda and Lango were Annual meetings. In 2021, majority of sub regions reported to have conducted quarterly meetings (52.2%) followed by annual meetings. Some few respondents from the various districts also reported they were unaware of a DDMC meeting having been conducted by their district

Table 85. Frequency of DDMC meeting during the last twelve months by Region-2021

Sub region	Monthly	Quarterly	Annually	Never/Do not Know	Total	Number
	%					
Buganda South	0	25	50	25	100	4
Buganda North	0	0	33.3	66.7	100	3
Busoga	0	100	0	0	100	2
Bukedi	0	66.7	0	33.3	100	3
Bugisu	25	50	25	0	100	4
Teso	0	100	0	0	100	3
Karamoja	50	25	25	0	100	4
Lango	0	50	50	0	100	4
Acholi	0	100	0	0	100	1
West Nile	50	25	0	25	100	4
Bunyoro	0	66.7	0	33.3	100	3
Tooro	33.3	66.7	0	0	100	3
Ankole	0	75	25	0	100	4
Kigezi	0	50	0	50	100	4
Total	13	52.2	17.4	17.4	100	46

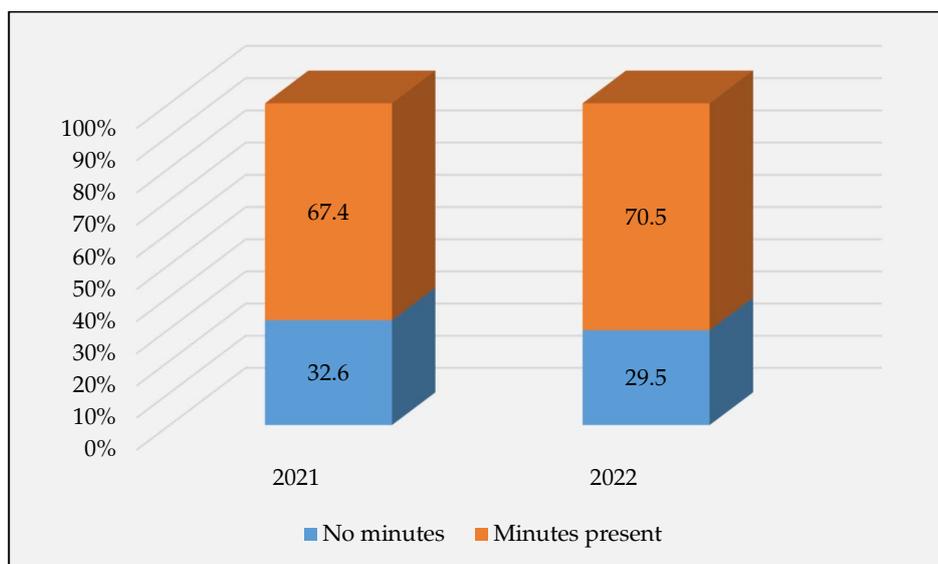
According to table 86 below, in 2022, 75 percent of meetings conducted in West Nile were monthly meetings, and Ankole, Acholi, Teso, Bukedi and Busoga only conducted quarterly meetings and missed out conducting monthly and annual meetings. Annual meetings were mostly conducted by Buganda (75%), followed by Bunyoro (68 %) and Kigezi (50%). In 2022, there was a slight reduction in the number of annual District Disaster Management Committee meetings conducted with slight increases reported on the proportion of quarterly and monthly meetings conducted as compared to the previous year 2021.

Table 86. Frequency of DDMC meeting during the last twelve months by Region-2022.

Sub region	Monthly	Quarterly	Annually	Never/Do not Know	Total	Number
	%					
Buganda South	0	0	25	75	100	4
Buganda North	0	33.3	33.3	33.3	100	3
Busoga	0	100	0	0	100	2
Bukedi	0	100	0	0	100	3
Bugisu	25	50	25	0	100	4
Teso	0	100	0	0	100	3
Karamoja	33.3	33.3	33.3	0	100	3
Lango	0	50	50	0	100	2
Acholi	0	100	0	0	100	2
West Nile	75	25	0	0	100	4
Bunyoro	0	33.3	0	66.7	100	3
Tooro	25	75	0	0	100	4
Ankole	0	100	0	0	100	4
Kigezi	0	50	0	50	100	4
Total	13.3	57.8	11.1	17.8	100	45

Evidence of minutes at national level were analysed and according to Figure 16 below, 67 percent of districts that conducted DDMC meetings had minutes' available as evidence in 2021, while in 2022, 70.5% of the districts that conducted DDMC meetings had minutes available which translated into a 3 percent increase in number of districts with minutes conducted in 2022.

Figure 16. Evidence of minutes recording at national level for the year 2021 and 2022



Regionally, Buganda South (75%) had the highest percentage of districts with no meeting minutes, followed by Buganda North (67%), Teso (67%). While Bukedi, Karamoja, Lango, Acholi had evidence of meeting minutes in all respective districts. In comparison with 2022, 100 percent of all the districts in Buganda South did not have meeting minutes in 2022, this implies a 25 percent decrease in showing evidence for meeting minutes in 2022, this trend was also recorded in Busoga sub region. Further details are in table 87 below.

Table 87. Evidence of meetings by sub region

Sub region	2021				2022			
	No minutes	Minutes present	Total	Number	No minutes	Minutes present	Total	Number
	%				%			
Buganda South	75	25	100	4	100	0	100	4
Buganda North	66.7	33.3	100	3	33.3	66.7	100	3
Busoga	50	50	100	2	100	0	100	2
Bukedi	0	100	100	2	0	100	100	2
Bugisu	25	75	100	4	25	75	100	4
Teso	66.7	33.3	100	3	33.3	66.7	100	3
Karamoja	0	100	100	4	0	100	100	3
Lango	0	100	100	4	0	100	100	2
Acholi	0	100	100	1	0	100	100	2
West Nile	25	75	100	4	0	100	100	4
Bunyoro	33.3	66.7	100	3	66.7	33.3	100	3
Tooro	25	75	100	4	0	100	100	4
Ankole	25	75	100	4	0	100	100	4
Kigezi	50	50	100	4	50	50	100	4
Total	32.6	67.4	100	46	29.5	70.5	100	44

6.2.1 Presence of a Disaster Preparedness and Management Plan

Figure 17 shows that 52 percent of districts did not have disaster preparedness and management plans in 2021, there was a more than 8 percent decrease in number of districts without disaster preparedness and management plans in 2022.

As per table 88, on the regional distribution showing presence of disaster preparedness and management plans in 2021; Buganda South, Bukedi, and Acholi districts reported unavailability of district disaster preparedness and management plans. Teso sub region had the highest percentage of districts with disaster preparedness and management plan (100%), followed by Karamoja (75%). While in 2022, all the districts in Teso, Acholi, West Nile and Tooro assessed indicated they had disaster preparedness and management plans as compared to only one sub region in 2021.

However, Buganda North, and Bukedi had the highest percentage of districts without presence of disaster preparedness and management plan in 2022 with no change since 2021 especially for the latter.

Figure 17. Presence of Disaster Preparedness and Management Plan

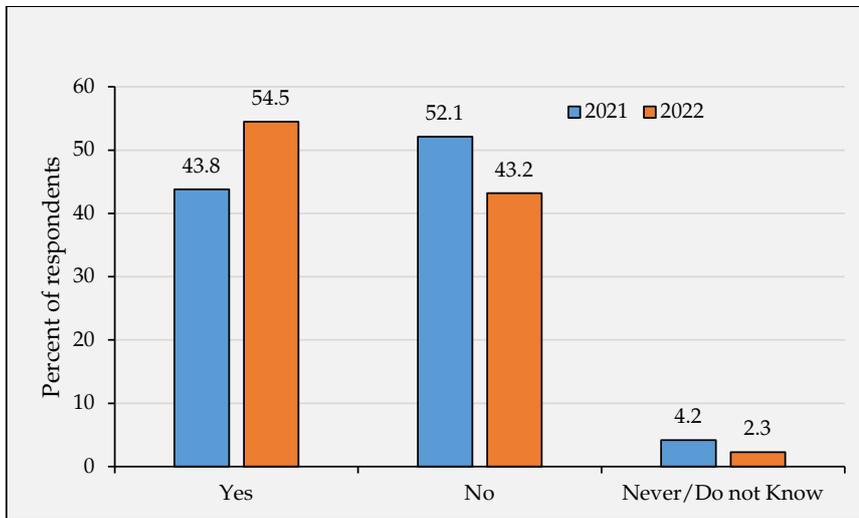


Table 88. Presence of Disaster Preparedness and Management Plan (DPM)

Sub region	2021					2022				
	Yes	No	Never/Do not Know	Total	N	Yes	No	Never/Do not Know	Total	N
	%					%				
Buganda South	0	100	0	100	4	25	75	0	100	4
Buganda North	0	66.7	33.3	100	3	0	100	0	100	3
Busoga	66.7	33.3	0	100	3	50	50	0	100	2
Bukedi	0	100	0	100	3	0	100	0	100	2
Bugisu	50	50	0	100	4	50	50	0	100	4
Teso	100	0	0	100	3	100	0	0	100	3
Karamoja	75	25	0	100	4	66.7	33.3	0	100	3
Lango	50	50	0	100	4	50	50	0	100	2
Acholi	0	100	0	100	1	100	0	0	100	2
West Nile	50	25	25	100	4	100	0	0	100	4
Bunyoro	33.3	66.7	0	100	3	0	66.7	33.3	100	3
Tooro	50	50	0	100	4	100	0	0	100	4
Ankole	50	50	0	100	4	50	50	0	100	4
Kigezi	50	50	0	100	4	50	50	0	100	4
Total	43.8	52.1	4.2	100	48	54.5	43.2	2.3	100	44

Table 89 reveals that in 2021, less than 59 percent of the districts mainstreamed their Disaster Preparedness and Management (DPM) plans into the District Development Plan (DDP) or sector work plans and 41.3 percent of the districts hadn't mainstreamed their plans. However, the number of mainstreamed DPM plans into DDPs or sector work plans by districts increased by 4.7 percent in 2022 from 58.7% the previous year to 63.4% percent. Table 89 shows that regionally, no district from Buganda North over the two years mainstreamed their DPM plans into the DDP/ sector work plans, as shown below.

Table 89. Distribution of DPM Plans mainstreamed in the DDP/Sector Work plans by region.

Sub Region	2021				2022			
	No	Yes	Total	Number	No	Yes	Total	Number
	%				%			
Buganda South	75	25	100	4	75	25	100	4
Buganda North	100	0	100	2	100	0	100	2
Busoga	0	100	100	3	0	100	100	3
Bukedi	50	50	100	2	100	0	100	2
Bugisu	25	75	100	4	25	75	100	4
Teso	33.3	66.7	100	3	0	100	100	2
Karamoja	0	100	100	4	0	100	100	3
Lango	0	100	100	4	0	100	100	2
Acholi	100	0	100	1	0	100	100	2
West Nile	75	25	100	4	25	75	100	4
Bunyoro	33.3	66.7	100	3	33.3	66.7	100	3
Tooro	50	50	100	4	50	50	100	4
Ankole	50	50	100	4	33.3	66.7	100	3
Kigezi	50	50	100	4	66.7	33.3	100	3
Total	41.3	58.7	100	46	36.6	63.4	100	41

Table 90 indicates that, approximately 48 percent of districts in Uganda had no DPM mainstreamed in the district in 2021 while in 2022, 48.8 percent of the districts had no DPM mainstreamed in the district. Regionally, in 2021, Buganda North (100%) and Bukedi (100%) had no DPM mainstreamed in their respective districts, followed by Lango (75%) and Buganda South (75%). Whereas regional distribution in 2022 shows that Buganda North (100%), Bukedi (100%), Buganda South (75%) and Busoga (75%) had the highest number of districts with no DPM mainstreamed in their respective district activities.

Distribution of DPM mainstreamed in the districts is presented in Annex 3 with more than 47 percent of the districts having not mainstreamed DPM activities in the district. Adjumani, Alebtong, Amolatar are among the districts with no DPM mainstreamed whereas Bududa, Bulisa and Bundibugyo are among the districts that mainstreamed DPM in their district activities.

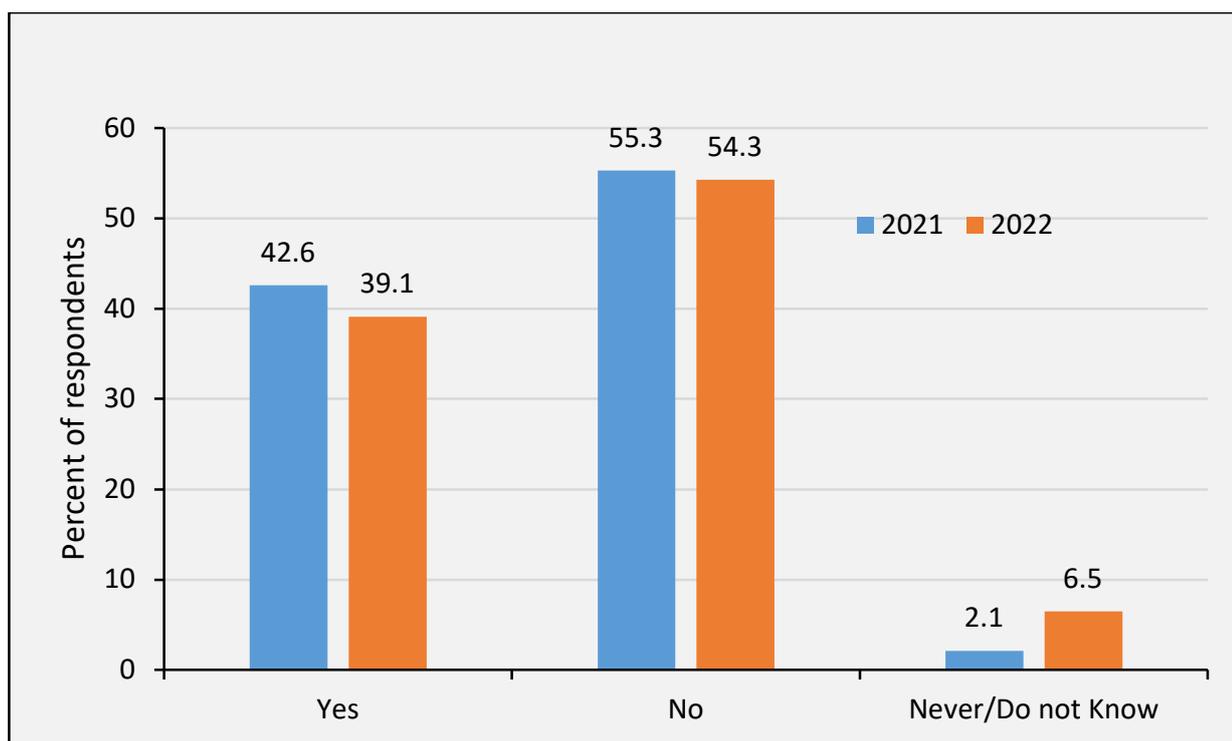
Table 90. Disaster Preparedness and Management (DPM) mainstreamed in the District by region

Sub Region	2021				2022			
	No	Yes	Total	Number	No	Yes	Total	Number
	%				%			
Buganda South	75	25	100	4	75	25	100	4
Buganda North	100	0	100	3	100	0	100	3
Busoga	0	100	100	3	50	50	100	2
Bukedi	100	0	100	1	100	0	100	2
Bugisu	50	50	100	4	75	25	100	4
Teso	0	100	100	3	0	100	100	3
Karamoja	0	100	100	4	0	100	100	3
Lango	75	25	100	4	50	50	100	2
Acholi	0	100	100	1	0	100	100	2
West Nile	66.7	33.3	100	3	25	75	100	4
Bunyoro	66.7	33.3	100	3	33.3	66.7	100	3
Tooro	50	50	100	4	50	50	100	4
Ankole	33.3	66.7	100	3	50	50	100	4
Kigezi	50	50	100	4	66.7	33.3	100	3
Total	47.7	52.3	100	44	48.8	51.2	100	43

6.3 Receipt of Monthly Uganda National Integrated Early Warning Systems Bulletin (UNIEWS) from Office of the Prime Minister (OPM)

Figure 18 indicates the percentage of districts which received a monthly copy of the Uganda National Integrated Early Warning System Bulletin (UNIEWS) from Office of the Prime Minister in 2021 and 2022. Accordingly, over 55 percent of districts did not receive the early warning system bulletin from Office of the Prime Minister in 2021 compared to over 54 percent districts that did not receive the early warning bulletin in 2022. However, 39.1 percent of the districts assessed received monthly UNIEWS in 2022, a 3.5 percent reduction from 2021, where 42.6 percent received monthly UNIEWS bulletin.

Figure 18. Receipt of Monthly UNIEWS from OPM



In table 91, on the regional distribution of UNIEWS bulletin from OPM in 2021, the districts that received a monthly copy of the UNIEWS bulletin, were from Karamoja (75%), Lango (75%), and Kigezi (75%). None of the districts in 2021, from Buganda North, Bugisu, Teso and Acholi received monthly UNIEWS. Whereas the highest percentage that did not receive UNIEWS bulletin in the year 2022, was from Teso (100%) and Acholi (100%). Further, in the year 2022, 39 percent that received a monthly UNIEWS bulletin, majority of the districts were from Kigezi (75%), followed by Bunyoro (67%) and Karamoja (67%). In 2022, there was no district from Buganda South, Buganda North, Teso Acholi that received a monthly copy of the UNIEWS bulletin and over 6 percent of the districts did not know about UNIEWS.

Table 91. Receipt of Monthly UNIEWS bulletin from OPM by region

Sub Region	2021				2022				
	Yes	No	Total	Number	Yes	No	Never/Do not Know	Total	Number
	%				%				
Buganda South	25	50	100	4	0	75	25	100	4
Buganda North	0	100	100	3	0	66.7	33.3	100	3
Busoga	33.3	66.7	100	3	33.3	66.7	0	100	3
Bukedi	50	50	100	2	33.3	66.7	0	100	3
Bugisu	0	100	100	4	25	75	0	100	4
Teso	0	100	100	3	0	100	0	100	3
Karamoja	75	25	100	4	66.7	33.3	0	100	3
Lango	75	25	100	4	50	50	0	100	2
Acholi	0	100	100	1	0	100	0	100	2
West Nile	50	50	100	4	75	25	0	100	4
Bunyoro	66.7	33.3	100	3	66.7	0	33.3	100	3
Tooro	50	50	100	4	50	50	0	100	4
Ankole	50	50	100	4	50	50	0	100	4
Kigezi	75	25	100	4	75	25	0	100	4
Total	42.6	55.3	100	47	39.1	54.3	6.5	100	46

6.4 Multi hazard early warning systems that ease information sharing and flow in the affected district.

Assessment on the availability of multi hazard early warning systems in the assessed districts is shown in Figure 19. Accordingly, 34 percent of the districts had multi hazard early warning systems in 2021 and 42.2 percent in 2022. Whereas over 61.7 percent of the districts had no multi hazard early warning system in 2021 with a decrease to 53.3 percent in 2022.

Figure 19. Multi hazard early warning systems that ease information sharing and flow in the affected district

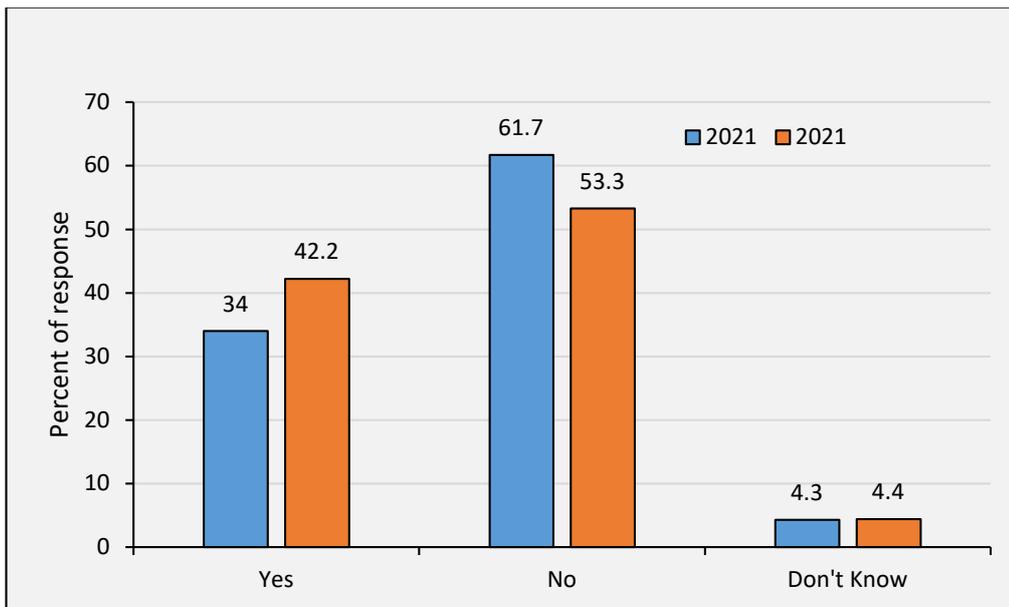


Table 92 indicates that in 2021, 100% of the districts in Acholi sub region reported presence of an early warning system, followed by 66.7% in Bunyoro and Bukedi as shown. None of the districts in Buganda South, Bugisu, Teso and Ankole reported presence of a multi hazard early warning system in 2021. While in 2022, the same table indicates that districts in Acholi (100%) and West Nile (100%) reported presence of a multi hazard early warning system to share information on hazards, whereas Busoga, Bugisu and Teso did not have any multi hazard early warning system for sharing information on hazards in their districts. However, 33 percent of districts from Buganda North and Bunyoro reported a lack of awareness about the presence of multi hazard early warning systems during both 2021 and 2022.

Table 92. Multi hazard early warning systems that ease information sharing and flow in the assessed district by region.

Sub Region	2021					2022				
	Yes	No	Never/Do not Know	Total	No.	Yes	No	Never/Do not Know	Total	No.
	%					%				
Buganda South	0	100	0	100	3	25	75	0	100	4
Buganda North	33.3	33.3	33.3	100	3	33.3	33.3	33.3	100	3
Busoga	33.3	66.7	0	100	3	0	100	0	100	3
Bukedi	66.7	33.3	0	100	3	66.7	33.3	0	100	3
Bugisu	0	100	0	100	4	0	100	0	100	3
Teso	0	100	0	100	3	0	100	0	100	3
Karamoja	50	50	0	100	4	66.7	33.3	0	100	3
Lango	50	50	0	100	4	50	50	0	100	2
Acholi	100	0	0	100	1	100	0	0	100	2
West Nile	50	50	0	100	4	100	0	0	100	4
Bunyoro	66.7	0	33.3	100	3	33.3	33.3	33.3	100	3
Tooro	50	50	0	100	4	25	75	0	100	4
Ankole	0	100	0	100	4	75	25	0	100	4
Kigezi	25	75	0	100	4	25	75	0	100	4
Total	34	61.7	4.3	100	47	42.2	53.3	4.4	100	45

6.5 Existing types of multi hazard early warning systems across the districts

Table 93 below presents the different types of multi hazard warning systems used by the districts for various hazards including mass notification, SMS text systems, outdoor public warning systems, color code alerts, and organization emergency alerts. Generally, the most frequently used multi hazard early warning systems during 2021 and 2022 were mass notification followed by outdoor public warning system and organization emergency alerts.

The findings show that in 2021, majority of mass notification warning system in place is used for floods (10), drought (10) and prolonged dry spell (10). No Wireless emergency alerts were in place for warning of any type of hazard. SMS text system was mostly used in warning for pest and diseases, floods, hailstorm and pandemic. Outdoor public warning was mostly used in floods, prolonged dry spell and pests and diseases. Color code alerts were mostly used in drought whereas organization emergency alert were mostly used in floods, drought, pandemic and pest and diseases. In 2022, Mass notification was most frequently used for pest and diseases (12), floods (10), drought (9), prolonged dry spell (10). While wireless emergency alerts were used for all hazards an improvement on the previous year. Further details are in the table below.

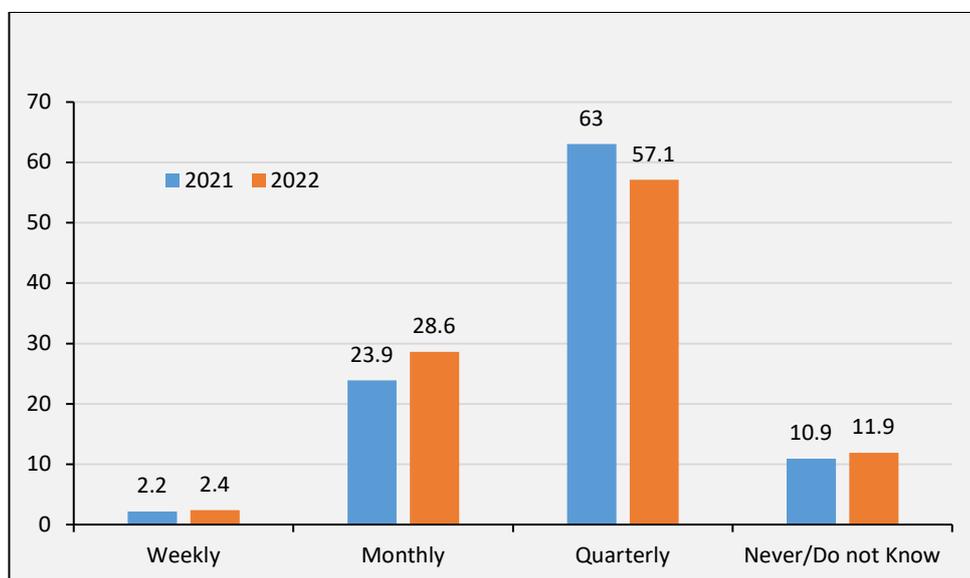
Table 93. Types of multi hazard early warning systems in placet

Type of Hazard	2021							2022						
	Mass Notification	Wireless Emergency Alerts	SMS Text Systems	Outdoor Public Warning System	Color Code Alerts	Organization Emergency Alerts	Others	Mass Notification	Wireless Emergency Alerts	SMS Text Systems	Outdoor Public Warning System	Color Code Alerts	Organization Emergency Alerts	Others
Floods	10	0	3	6	0	3	2	10	1	4	5	1	4	4
Drought	10	0	1	3	2	3	3	9	1	1	6	3	4	1
Prolonged Dry Spells	10	0	1	4	1	2	3	10	1	2	5	2	2	1
Landslides	1	0	0	0	0	0	0	6	1	2	5	1	3	1
Hail/Wind Storm	5	0	3	2	0	1	0	8	1	4	4	1	3	3
Epidemic	5	0	1	1	0	1	1	7	1	3	6	2	3	1
Lightning	4	0	0	2	0	1	0	7	1	1	3	1	2	1
Pandemic	5	0	3	4	1	3	2	7	2	4	6	2	4	2
Earthquake	0	0	0	0	0	0	0	2	1	0	2	0	1	1
Conflict	4	0	0	2	0	1	0	7	1	1	4	1	4	0
Pests & Diseases	9	0	4	4	0	2	3	12	1	4	7	1	4	4
Other	0	0	0	0	0	0	0	1	1	1	1	1	1	0
Total	63	0	16	28	4	17	14	86	13	27	54	16	35	19

6.6 Frequency of sharing disaster risk information

Figure 20 presents the frequency of sharing disaster risk information across the districts. Most of the disaster information was shared on quarterly in 2021 (63%) and (57.1%) in 2022. While least frequency of disaster information sharing was on weekly in 2021 (2.2%) and improved slightly to 2022 (2.4%). The results indicate that there was a decrease in the quarterly frequency of sharing disaster information from 63 percent in 2021 to 57 percent in 2022.

Figure 20. Frequency of sharing disaster risk information



Regional distribution of disaster information sharing shows that in 2021, Busoga, Bukedi, Bugisu, Lango, Acholi, and Ankole shared disaster risk information on quarterly frequency only. While Buganda North, shared most of their information either weekly or monthly. Whereas in 2022, Acholi, Lango and Bugisu shared disaster risk information on quarterly frequency only. West Nile shared risk information on monthly frequency only. Please see Table 94 for details

Table 94. Frequency of sharing disaster risk information by region

Sub region	2021					2022						
	Weekly	Monthly	Quarterly	Never/Do not Know	Total	Number	Weekly	Monthly	Quarterly	Never/Do not Know	Total	Number
	%					%						
Buganda South	0	0	75	25	100	4	0	0	50	50	100	4
Buganda North	33.3	33.3	0	33.3	100	3	33.3	33.3	33.3	0	100	3
Busoga	0	0	100	0	100	3	0	50	50	0	100	2
Bukedi	0	0	100	0	100	3	0	33.3	66.7	0	100	3
Bugisu	0	0	100	0	100	3	0	0	100	0	100	3
Teso	0	33.3	66.7	0	100	3	0	33.3	66.7	0	100	3
Karamoja	0	75	25	0	100	4	0	50	50	0	100	2
Lango	0	0	100	0	100	4	0	0	100	0	100	2
Acholi	0	0	100	0	100	1	0	0	100	0	100	2
West Nile	0	75	0	25	100	4	0	100	0	0	100	4
Bunyoro	0	33.3	33.3	33.3	100	3	0	50	0	50	100	2
Tooro	0	25	75	0	100	4	0	25	75	0	100	4
Ankole	0	0	100	0	100	3	0	0	75	25	100	4
Kigezi	0	25	50	25	100	4	0	25	50	25	100	4
Total	2.2	23.9	63	10.9	100	46	2.4	28.6	57.1	11.9	100	42

7. EMERGENCY SUPPORT AND RELIEF

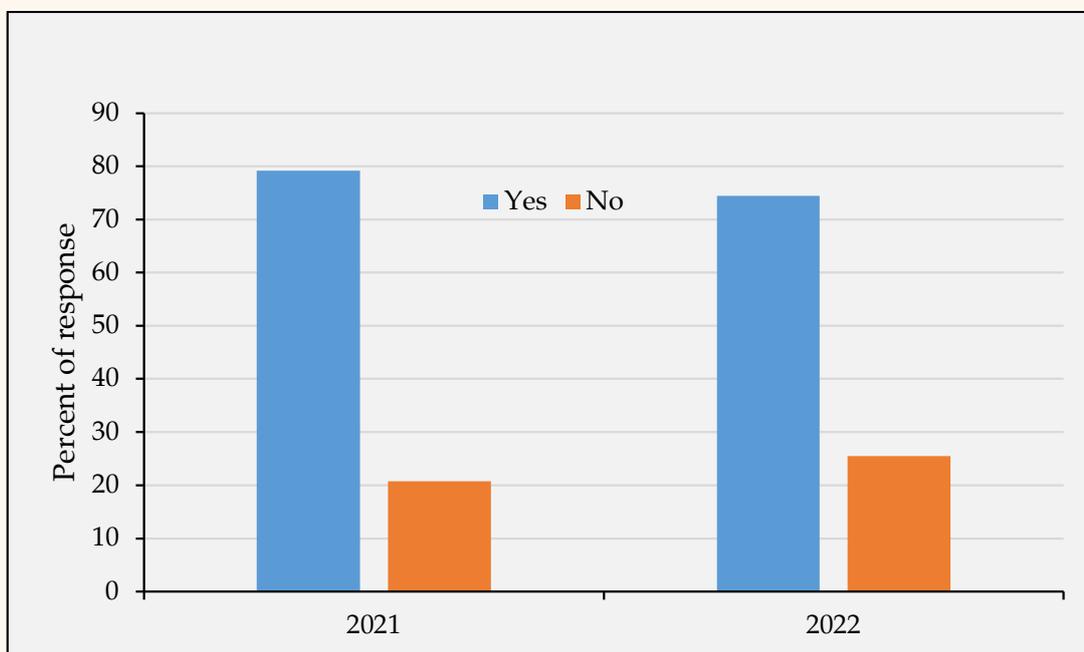
7.1 Introduction

This chapter presents the different emergency support and relief which were received in the assessed districts and communities during disasters for the year 2021 and 2022. Furthermore, different items received by the affected districts are summarized under this chapter including proposed interventions for the future.

7.2 Emergency support and relief received by districts

Figure 21 shows that 79.2% and 74.5% (presenting a 4.7% decrease in the relief support from 2021 to 2022) of the districts that received emergency support and relief during the time of disasters in the year 2021 and 2022, respectively.

Figure 21. Emergency support received by Districts



Regional distribution of emergency support shows that all the affected districts from Bukedi, Teso, West Nile, Bunyoro, Tooro and Ankole fully confirmed receipt of humanitarian emergency relief support for their requests in 2021 while in 2022, all the districts affected from Bukedi, Teso, Lango, Acholi and Ankole fully confirmed receipt of emergency relief support for their requests. With the exception of Acholi in 2021, all sub regions confirmed receiving relief support for affected households to some degree through-out both years. Kigezi was the other sub region that received below 50% of the relief support in 2021. In 2022, despite less districts receiving relief food, all sub regions reported receipt of relief food assistance. See Table 95 for details.

Table 95. Regional emergency support and relief received

Sub region	2021				2022			
	Yes	No	Total	Number	Yes	No	Total	Number
	%				%			
Buganda South	75	25	100	4	50	50	100	4
Buganda North	66.7	33.3	100	3	66.7	33.3	100	3
Busoga	66.7	33.3	100	3	66.7	33.3	100	3
Bukedi	100	0	100	3	100	0	100	3
Bugisu	75	25	100	4	75	25	100	4
Teso	100	0	100	3	100	0	100	3
Karamoja	75	25	100	4	66.7	33.3	100	3
Lango	75	25	100	4	100	0	100	2
Acholi	0	100	100	1	100	0	100	2
West Nile	100	0	100	4	75	25	100	4
Bunyoro	100	0	100	3	50	50	100	4
Tooro	100	0	100	4	75	25	100	4
Ankole	100	0	100	4	100	0	100	4
Kigezi	25	75	100	4	50	50	100	4
Total	79.2	20.8	100	48	74.5	25.5	100	47

CONCLUSION

The 2021 and 2022 ASDR revealed that there was a slight increase of 1 percent in disaster occurrence from 51 percent in 2021 to 52 percent in 2022. Floods, hailstorm, pest and diseases, prolonged dry spells and pandemic occurred most frequently in the districts in the year 2021. Whereas in 2022 it was mostly hailstorm, followed by floods, prolonged dry spell, pests & diseases, details are provided in Figure 2, despite, the economic cost being much higher in 2021 compared to 2022.

The assessment revealed that in 2021, March and April were the most hit by disaster occurrence of about 73, followed by July and August of about 70 and 68 number of occurrences respectively. These findings also indicate that pandemic (specifically COVID19), floods and hailstorm were the highest types of disaster occurrence for the months that were hit most by disaster occurrence, please see details in table 5) below. Whereas in 2022, April was the most affected by disaster occurrence (73 times) followed by March (63 times), February (63 times) and August (61 times).

Disasters caused the number of displaced households to increase by 176,732 from 37,243 in 2021 to 213,975, in 2022 with the displaced number of children increased to 36,934 from 8,944 and PWDs also increased from 31 to 581 between 2021 and 2022. Increase in levels of displaced can be attributed to opening of sectors of the economy after the COVID19 lock down was lifted additional to the increase in hazards in 2022. As regards injuries, there was a decline from 1,382,848 people injured in 2021 to 808,878 in 2022, this number reduced significantly by 573,970 individuals. As far as deaths are concerned, more lives were lost in 2021 with 7,416 compared to the following year with 5,670 recorded deaths due to disasters, most deaths were recorded due to traffic accidents followed by Public Health Emergencies (PHEs) such as COVID 19 pandemic and Ebola epidemic.

Disasters are still very much a part of our society with no sector/ sub region spared from the adverse impact of hazards therefore necessitating a call to action so as to protect the households and individuals regularly affected by both natural and man-made shocks.

FINAL THOUGHTS

2021 and 2022; were years that experienced impacts of hazards that were carried over from previous years such as the rising water levels that occurred in 2019 and 2020, the COVID 19 impact that occurred in 2020 and lasted for close to three (3) years among others. Government of Uganda during the two (2) years embarked on system strengthening through training numerous District Disaster Management Committees, formulating of various preparedness and response plans, supporting over 400,000 households with relief food and non-food items among others.

The Annual State of Disaster Report (ASDR) 2021 and 2022, shows works/Transport, production as the most affected sectors during both years and also shows floods as the most prevalent hazard with impacts on various sectors and assets. Over time the country, has witnessed a reduction of the economic cost of disasters reflecting the bi-annual nature of hazards such as drought/prolonged dry spells and floods which have the biggest impacts on communities. In 2021, the economic cost as a result of impacts to six (6) key sectors of the economy was at UGX 262.3bn and higher than the following year which recorded a loss of UGX 234.7bn. The unpredictable nature of disasters and climate change led to some sectors getting worse while others improved across the two (2) years.

Further, the ASDR reminds us of the need to disaster proof our development efforts through our different plans starting from the Programme Implementation Action Plans (PIAPs) to the sector plans, work plans and budgets if we are to mitigate the impact of hazards on our development efforts. Mitigation remains the most necessary initiative to be used in reducing the future impact of hazards on the welfare and development trajectory of our country.

The Department of Relief, Disaster Preparedness and Management, remains grateful to the different partners and stakeholders of government that provided information to make this report a reality during the data collection and analysis exercises. We seek to develop an integrated Disaster Information Management System that shall provide hazard and disaster statistics and information in real time covering more hazards and districts aside from the sample of 52 districts used in this exercise.

Thank you.



Ahimbisibwe Catherine
Ag. Commissioner Relief, Disaster Preparedness and Management



IN CONCLUSION

Riding the Waves of Uncertainty

The past two years have been a stark reminder of Uganda's vulnerability. As documented in this Annual State of Disaster Report (ASDR), natural disasters displaced over 251,218 households and inflicted economic losses exceeding UGX 248 billion (USD 65.3 million) in 2021-2022. Floods ravaged eastern Uganda, while prolonged droughts crippled agricultural production in the Karamoja region. These events not only caused immense human suffering but also hampered our national development goals.

Yet, amidst the hardship, the ASDR reveals a flicker of hope. The report highlights an increase in functionality of District Disaster Management Committees (DDMCs) across the country. This improvement signifies a more coordinated response at the local level, ensuring faster response and delivery of aid to affected communities.

However, the future remains uncertain. Climate change threatens to intensify existing hazards. We must act with urgency. We need to emphasize strengthening and expanding our early warning systems, particularly in the most vulnerable regions, which include Karamoja, South Western, Northern and parts of Central Uganda. By ensuring the critical information reaches the "last mile," we empower communities to take preventative measures and safeguard lives and livelihoods.

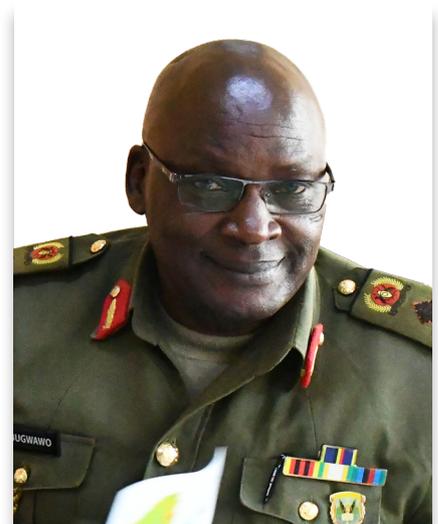
Building a more resilient Uganda requires a multi-pronged approach. We must prioritize investments in mitigation efforts, such as reinforcing infrastructure and promoting sustainable farming practices. Furthermore, the ASDR underscores the importance of community preparedness programs. Educating citizens on disaster risks and equipping them with essential skills will foster a culture of self-reliance and empower them to become active participants in their own safety.

In the pages of this ASDR a picture of a tested but not defeated nation is painted. By harnessing the power of data, innovation, and community engagement, we can navigate the waves of uncertainty and build a Uganda that can withstand future disasters.

Together, we can weather any storm.



**Eugene Ssenkumba Ssebugwawo, Brigadier General
National Coordinator and Head, National Emergency
Coordination and Operations Centre (NECOC)**



THE ANNEXES

Annex 1. Impact of hazard to the type of crop by extent of damage (by area and estimated loss) by Region in 2021

Category of Crop affected	Number of Acres affected and Estimated loss in Uganda shillings from damage by Sub region 2021											All			
	Acholi	Ankole	Buganda North	Buganda South	Bukedi	Bunyoro	Busoga	Elgon	Karamoja	Kigezi	Lango		Rwenzori	Teso	West Nile
	Acres/Estimated loss (Ugx)														
Rice-acres	0	0	0	0	15,663	435	1,122	5,809	0	6,570	21,967	1,659	14,175	1,509	68,909
Rice-loss	0	0	0	0	681,000,000	280,000,000	10,100,000,000	24,000,000,000	0	33,000,000,000	17,200,000,000	2,340,000,000,000	8,470,000,000,000	10,700,000,000,000	82,700,000,000,000
Groundnuts-	100	267	0	46	29,936	0	1,344	0	0	431	7,537	649	56,339	29,832	126,481
Groundnuts-	72,000,000	989,000,000	0	48,300,000	59,800,000,000	0	922,000,000,000	0	0	2,610,000,000,000	519,000,000,000	709,000,000,000	4,040,000,000,000	13,300,000,000,000	4,110,000,000,000,000
Cassava-	0	184	1,717	64	25	2,780	46,005	8	0	685	40,387	803	36,163	32,151	160,972
Cassava-	0	445,000,000	2,060,000,000	227,000,000,000	22,500,000,000,000	14,300,000,000,000	110,000,000,000,000	12,000,000,000,000	0	1,360,000,000,000,000	76,400,000,000,000	1,630,000,000,000,000	5,040,000,000,000,000	49,800,000,000,000,000	5,300,000,000,000,000,000
Maize-	120	192	1,135	356	24,761	89,640	21,887	30	1,330	1,614	93,201	6,226	41,875	21,888	304,255
Maize-	96,000,000	105,000,000,000	1,110,000,000,000	208,000,000,000,000	122,000,000,000,000,000	6,490,000,000,000,000	43,700,000,000,000,000	50,400,000,000,000,000	51,700,000,000,000,000	904,000,000,000,000,000	116,000,000,000,000,000	10,600,000,000,000,000,000	2,010,000,000,000,000,000	8,970,000,000,000,000,000	2,320,000,000,000,000,000,000
Beans-	330	2,565	7,634	288	210	18,880	930	29	0	3,607	100,883	2,379	15,399	15,728	168,861
Beans-	386,000,000	241,000,000,000	75,400,000,000,000	170,000,000,000,000,000	169,000,000,000,000,000	636,000,000,000,000,000	19,700,000,000,000,000,000	52,200,000,000,000,000,000	0	12,000,000,000,000,000,000	18,800,000,000,000,000,000	1,400,000,000,000,000,000,000	14,100,000,000,000,000,000,000	29,300,000,000,000,000,000,000	97,000,000,000,000,000,000,000
Pineapple-	0	50	0	0	25	0	0	0	0	24	62	2,014	0	0	2,175
Pineapple-	0	30,000,000,000	0	0	24,300,000,000,000	0	0	0	0	84,000,000,000,000,000	310,000,000,000,000,000	56,000,000,000,000,000,000	0	0	310,000,000,000,000,000,000
Sorghum-	0	60	485	22	15	0	0	0	0	1,706	81,651	9	44,709	19,744	148,402
Sorghum-	0	3,500,000,000	175,000,000,000,000	13,300,000,000,000,000	14,300,000,000,000,000,000	0	0	0	0	3,570,000,000,000,000,000	64,700,000,000,000,000,000	0	23,700,000,000,000,000,000,000	6,960,000,000,000,000,000,000	99,200,000,000,000,000,000,000

Annex 2. Impact of hazard to the type of crop by extent of damage (by area and estimated loss) by Region in 2022

Category of Crop	Number of Acres affected and Estimated loss in Uganda shillings from damage by Sub region 2022													All	
	Achol	Anko	Buganda North	Buganda South	Bukedi	Bunyo	Busoga	Elgon	Kara moja	Kigezi	Lango	Rwenzori	Teso		West Nile
	Acres/Estimated loss (Ugx)														
Rice-	0	0	2,514	20,174	369	226	4,079	16	0	327	46,372	90	3,797	299	78,263
Rice-	0	0	2,260,000	179,000,000	812,000	260,000	78,600,000	18,000,000	0	795,000	5,280,000	325,000,000	13,000,000	265,000,000	5,370,000,000
Groundnuts-	25,600	30	11,067	50	85	0	15,553	0	0	965	25,948	764	28,628	797	109,487
Groundnuts-	15,400,000	8,000,000	7,960,000	52,000,000	166,000	0	53,300,000	0	0	1,610,000	14,400,000	479,000,000	37,500,000	789,000,000	132,000,000
Cassava-	400	91	15,856	30	1,268	1,971	102,078	4	0	685	83,121	1,158	40,933	1,594	249,189
Cassava-	640,000	15,300,000	2,450,000	10,000,000	3,330,000	1,570,000	83,300,000	4,000,000	0	2,770,000	104,000,000	552,000,000	60,500,000	3,880,000,000	263,000,000
Maize-	630	92	6,745	470	1,107	165,538	155,673	34	190	1,575	149,272	9,224	57,615	2,216	550,381
Maize-	756,000	80,800,000	7,200,000	320,000,000	1,150,000	1,910,000	99,000,000	63,000,000	17,000,000	1,780,000	45,000,000	20,600,000	40,900,000	1,610,000,000	220,000,000
Beans-	13,250	930	2,981	231	514	33,326	2,687	31	120	2,015	118,131	3,713	12,918	840	191,687
Beans-	15,500,000	63,000,000	2,290,000	308,000,000	364,000	668,000	18,000,000	57,000,000	5,000,000	7,390,000	212,000,000	1,690,000,000	8,660,000,000	765,000,000	268,000,000
Pineapple	5	15	172	0	14	0	72	0	0	9	62,000	0	0	0	62,286
Pineapple	600,000	1,500,000	2,550,000	0	52,600,000	0	51,000,000	0	0	4,250,000	310,000,000	0	0	0	313,000,000
Sorghum-	0	13	0	25	40	0	356	0	120	1,139	82,788	294	56,826	576	142,177
Sorghum-	0	4,000,000	0	14,900,000	31,800,000	0	95,300,000	0	10,000,000	2,040,000	64,500,000	176,000,000	34,700,000	217,000,000	102,000,000
Passion-	0	20	122	6	3	0	156	10	0	616	6,150	238	0	0	7,321
Passion-	0	11,000	4,630,000	97,500,000	1,500,000	0	1,230,000	12,000,000	0	1,350,000	18,500,000	590,000,000	0	0	26,400,000

Annex 3. District Disaster Preparedness and Management (DPM) mainstreamed in the District

District Name	2021			2022		
	No	Yes	Total	No	Yes	Total
	%	%	%	%	%	%
ADJUMANI	100	0	100	100	0	100
ALEBTONG	100	0	100	100	0	100
AMOLATAR	100	0	100	0	0	0
BUDUDA	0	100	100	100	0	100
BULIISA	0	100	100	0	100	100
BUNDIBUGYO	0	100	100	0	100	100
BUSHENYI	0	100	100	0	100	100
BUVUMA	100	0	100	100	0	100
BUYENDE	0	100	100	0	0	0
DOKOLO	0	100	100	0	100	100
GULU	0	100	100	0	100	100
ISINGIRO	0	100	100	0	100	100
KAABONG	0	100	100	0	100	100
KAKUMIRO	100	0	100	0	100	100
KALAKI	0	100	100	0	100	100
KALIRO	0	100	100	0	100	100
KAPCHORWA	100	0	100	100	0	100
KASESE	100	0	100	100	0	100
KATAKWI	0	100	100	0	100	100
KAYUNGA	100	0	100	100	0	100
KAZO	100	0	100	100	0	100
KIBAALE	100	0	100	100	0	100
KIBOGA	100	0	100	100	0	100
KIBUKU	100	0	100	100	0	100
KISORO	100	0	100	100	0	100
KITAGWENDA	0	100	100	0	100	100
KOBOKO	100	0	100	0	100	100
KWEEN	0	100	100	0	100	100
KYOTERA	100	0	100	100	0	100
LIRA	100	0	100	0	0	0
LWENGO	0	100	100	0	100	100
MASAKA	100	0	100	100	0	100
MOROTO	0	100	100	0	100	100
NAKASONGOLA	100	0	100	100	0	100
NAMUTUMBA	0	100	100	0	0	0
NAPAK	0	100	100	0	0	0
NGORA	0	100	100	0	100	100
NTOROKO	100	0	100	100	0	100
RUBANDA	100	0	100	100	0	100



THE REPUBLIC OF UGANDA



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