

Kampala Baseline Report

October 2023



Picture credit: A data collector during one of the Household baseline survey sessions interviewing a lady operating a small-scale business in front of her home I Bwaise III. Photo by Lubega Edris, (NSDFU).

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Executive summary

This baseline study assesses the current status quo in terms of the impacts of weather and climate hazards, as well as residents' access to, understanding of, and use of weather and climate information (WCI) in both the Project Action Area (Bwaise) and the Control Area (Nalukolongo). The baseline study's specific objectives are as follows:

1. To understand the constraints and challenges faced by the target communities in accessing WCI and take early action
2. To assess the project's impact and results against key indicators

A mixed-method approach was employed to collect primary data. First, a household survey was conducted with 450 respondents (300 from the project area and 150 from the control area) to obtain quantitative data. Second, eight (8) key informant interviews and 64 participants in seven Focus Group Discussions were used to acquire qualitative data. Third, an Information Ecosystem Mapping workshop will be held in collaboration with ACTogether and UNMA partners to better understand the key actors in the weather and climate information services value chain and current dissemination channels. With regards to analysis, quantitative data was analysed using descriptive statistics and a probit regression model in Stata, while the qualitative data from KII and FGDs was analysed using thematic analysis where emergent themes were identified and summarised.

Key findings

Demographics and socio-economic characteristics

- Majority of respondents are female (67%).
- Most respondents (95%) have at least primary level education and among these, 52% attained secondary level education.
- Most respondents (94%) do not have any form of disability and are aged between 18-30 years (45%).
- Most respondents have an average monthly income above 100 000 Ugandan Shillings.
- Most respondents derive their incomes from providing casual labour and roadside vending or operating a kiosk (29%) and the majority of the respondents (64%) have a monthly household income of 100,000 or more.

Perceptions of hazards and impacts

- Flooding, disease outbreaks, and extreme cold events are the most common hazards that affect the residents.
- 74% of respondents had been affected by flooding lasting up to 12 hours in the 12 months prior to the survey.
- The majority of respondents (64%) said that people under the age of 18 are disproportionately affected by these floods, with November and April reported to be months with the highest prevalence of floods.

- The floods resulted in the loss of property, mainly furniture; disease outbreaks (malaria and typhoid); and disruption of mobility and food market access.
- To cope with floods at the household level, most respondents placed sandbags to prevent water from coming into the house (63%) and dug trenches around the house (52%).
- At the community level, most respondents indicated that people usually clear drainage channels (84%).

Access to WCI

- 59% of the respondents have access to weather and climate information. The likelihood of accessing or receiving WCI decreases by 11% among female respondents compared to male respondents. Residents within the age groups of 18-30 years and 51-60 years are more likely to receive WCI (by 23% and 25%, respectively) compared to other age groups. Nevertheless, the difference in access to WCI between respondents with no form of disability and respondents with some or a lot of difficulty is not statistically significant.
- Among respondents who receive WCI, 44% understand the information very well.
- Most of the respondents currently receive WCI from national media channels, mainly television and radio stations.
- Television and radio, especially community radio stations, again remained the most preferred channels to receive WCI among the residents. Mobile phone calls, the use of loudspeakers or megaphones, and SMS are also preferred channels.

Using WCI

- The majority of the respondents prefer to receive rainfall and heat forecasts with a lead time between 2 and 12 hours.
- Among the respondents who receive WCI, 94% use the information to take preparatory or anticipatory actions.
- The most implemented preparatory actions are: residents moved their belongings to safe places (65%) and they cleaned drainage channels to avoid flooding (41%).

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List of acronyms

DARAJA	Developing Risk Awareness through Joint Action
FGD	Focus Group Discussions
IEM	Information Ecosystem Mapping
KII	Key Informant Interviews
LC	Local Council
PWD	People Living with Disabilities
UBOS	Uganda Bureau of Statistics
UNMA	Uganda National Meteorological Authority
WCI	Weather and Climate Information
WISER	Weather and Climate Information Services

1 Introduction

1.1 Baseline research objectives

The main objective of this baseline assessment exercise is to capture data and information that will enable the project to establish the prevailing situation in the targeted communities and households about the impact of weather and climate hazards, and accessibility and usage of weather and climate information services. The specific objectives of the baseline study are:

1. To understand the constraints and challenges faced by the target communities in accessing WCI and take early action
2. To assess the project's impact and results against key indicators

1.2 Purpose of this report

The purpose of this *report*, which is an **internal working document** for the DARAJA consortium partners, is to:

- Present the current status of Bwaise and Nalukolongo in regard to the impact of weather and climate hazards and risks, accessibility and usage of weather and climate information services to support establishment of project key indicators, targets and implementation approaches.
- Provide an overview of the baseline research work undertaken, including methodology, results and analysis
- Layout a series of questions and a set of points for clarifications for discussion and resolution by DARAJA consortium partners related to:
 - The validity of the Logframe Targets, Outcome and Output Indicators and whether they might need to be adjusted
 - The ongoing pilot services and how they might need to be adjusted
 - Be an ongoing practical resource and reference for the partners

1.3 Indicators, outcomes, outputs and targets

Table 1: Outcome indicators and targets

	Baseline	Target			
		2023	2024	2025	2026
<u>Outcome Indicator 1:</u> Partners have improved capacity to collaborate and to meet user needs (monitoring the capacity)	0%	0%	50%	75%	100%
<u>Outcome Indicator 2:</u> (Empty row)	0	0	0	3500 0	5600 0

Number of people with access to weather and climate information services through a range of channels					
Outcome Indicator 3:					
Number of people feel better prepared to take adaptive action that avoids loss and damage	0	0	0	2100 0	4200 0
Output Indicator 1.1:					
Number of partnerships or networks established or strengthened to support user-led weather and climate services and plans for continued sustainability	0	1	6	6	6
Output Indicator 1.2:					
Number of learning activities within and between WISER projects	0	0	2	2	2
Output Indicator 2.1:					
Number of adaptations or innovation to WCIS that are responsive to improved understanding of user needs	0	0	5	5	5
Output Indicator 2.2:					
Percentage of people engaged in co-production processes with > 70% rating the process to 'improve' or 'considerably improve' their ability to use weather and climate information in their decision making	0	0%	75%	100%	100%
Output Indicator 2.3:					
Percentage of new products or enhancements to products and services are made operational through agreed Standard Operational Procedures	0	0%	0%	100%	100%
Output Indicator 3.1.1:					
Percentage of people engaged in co-production processes with > 70% rating the process to 'improve' or 'considerably improve' their awareness and knowledge of actions to take to reduce the impacts of weather	0	0	50%	75%	100%
Output Indicator 3.1.2:					
Percentage of people engaged in co-production processes with > 70% rating the process to 'improve' or 'considerably improve' their ability to understand and interpret relevant information	0	0	50%	75%	100%
Output Indicator 3.2:					
Community level and administrative Response Action Plans are developed	0	0	2	2	2

More details are in the logframe, which can be accessed through this [link](#).

2 Methodology

2.1 Description of project and control area

The DARAJA project “**Transforming Urban Weather and Climate Information Services in the informal settlements of Kampala**” is a two and half years project being piloted in Bwaise one of the intensively hit informal settlements in Uganda as a result of weather and climate hazards. This project undertook a baseline survey in the Project Action Area (Bwaise) and Project Control Area (Nalukolongo) purposely to gather information on the prevailing situation in regard to impacts of weather and climate hazards, and accessibility and usage of weather and climate information services.

Action Area: Bwaise

Bwaise III, comprised of 6 zones (St Francis, Bugalani, Katoogo, Bukasa, Kalimali and Kawaala), is one of the Parishes/slums in Kawempe Division within Kampala, the Capital City of Uganda. Bwaise III is bordered by Bwaise II to the north, [Kyebando](#) to the east, [Mulago](#) to the southeast, [Makerere](#) to the south and [Kasubi](#) to the southwest and located approximately 5 kilometres (3.1 mi), by road, north of Kampala's [central business district](#).

Bwaise III parish has one of the fastest population growth in Kampala and as of the 2002 population census, Bwaise III had 15,000 people with an estimated annual population growth of 9.6% which is above the national average (Katukiza, 2010). Currently, the population is estimated at 35,000 people which has resulted in encroachment on the [wetlands](#), the construction of unplanned buildings (inadequate infrastructure) and inadequate drainage systems. These developments coupled with the geographical location have made Bwaise the most affected informal settlement by floods all year round in Kampala accounting for massive losses in terms of properties, lives and disruption activities.

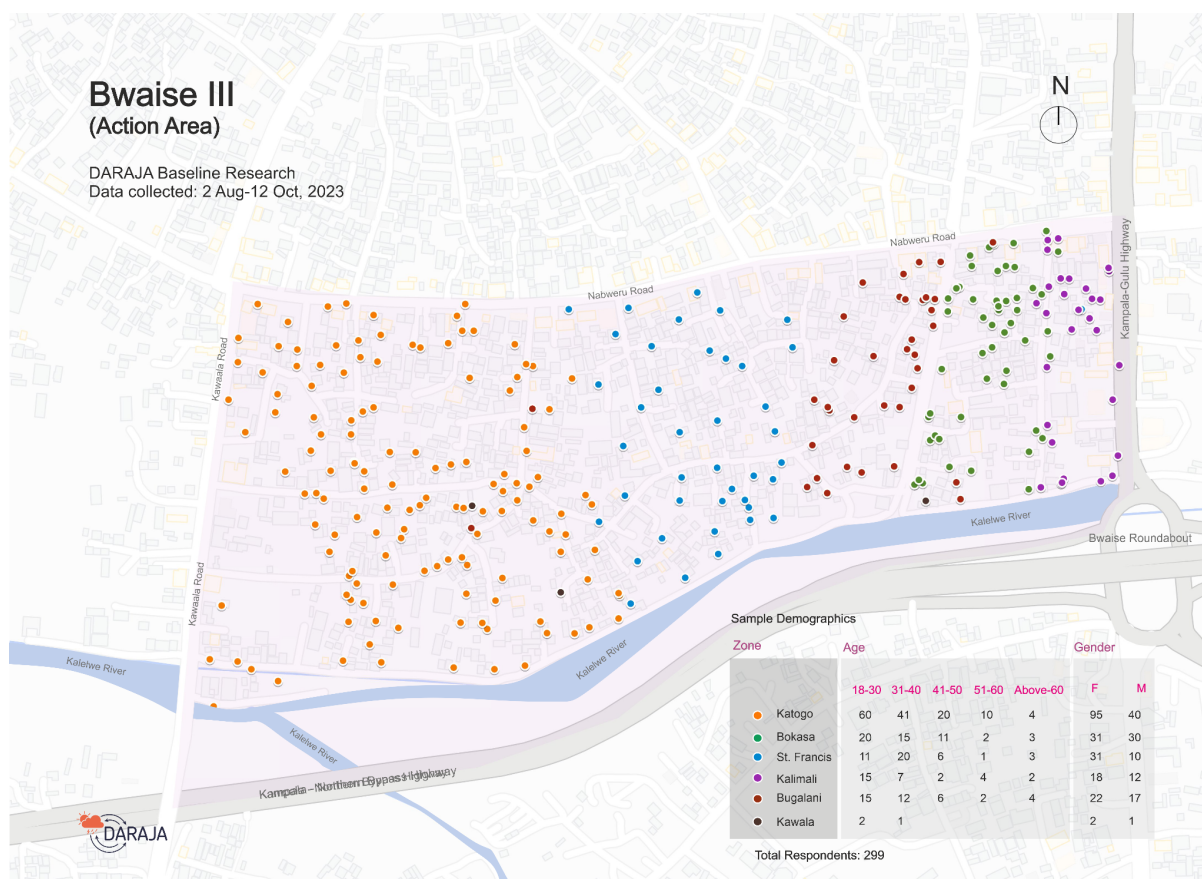


Figure 1: Map of data collection points in Action Area (Bwaise III)

Control Area: Nalukolongo-Kabowa parish

Kabowa parish, popularly known as Nalukolongo due to the ever-flooding Nalukolongo drainage channel, is one of the parishes in Rubaga Division. The parish is located 4 kilometres from the Kampala City Business Center. Formally a wetland and a sparsely populated informal settlement, Kabowa is currently a highly populated area with an estimated population of 25,000 people, occupying 10 zones (Sembule A & B, Serwadda, Suuna, Kironde, Church zone, Wankulukuku, Simbwa, St. Anne and Kabowa central). Just like Bwaise, Kabowa is located in a low-lying area, is densely populated with poor infrastructure and is prone to weather and climate hazards such as floods that pose the biggest threat to the lives and livelihoods of the residents.

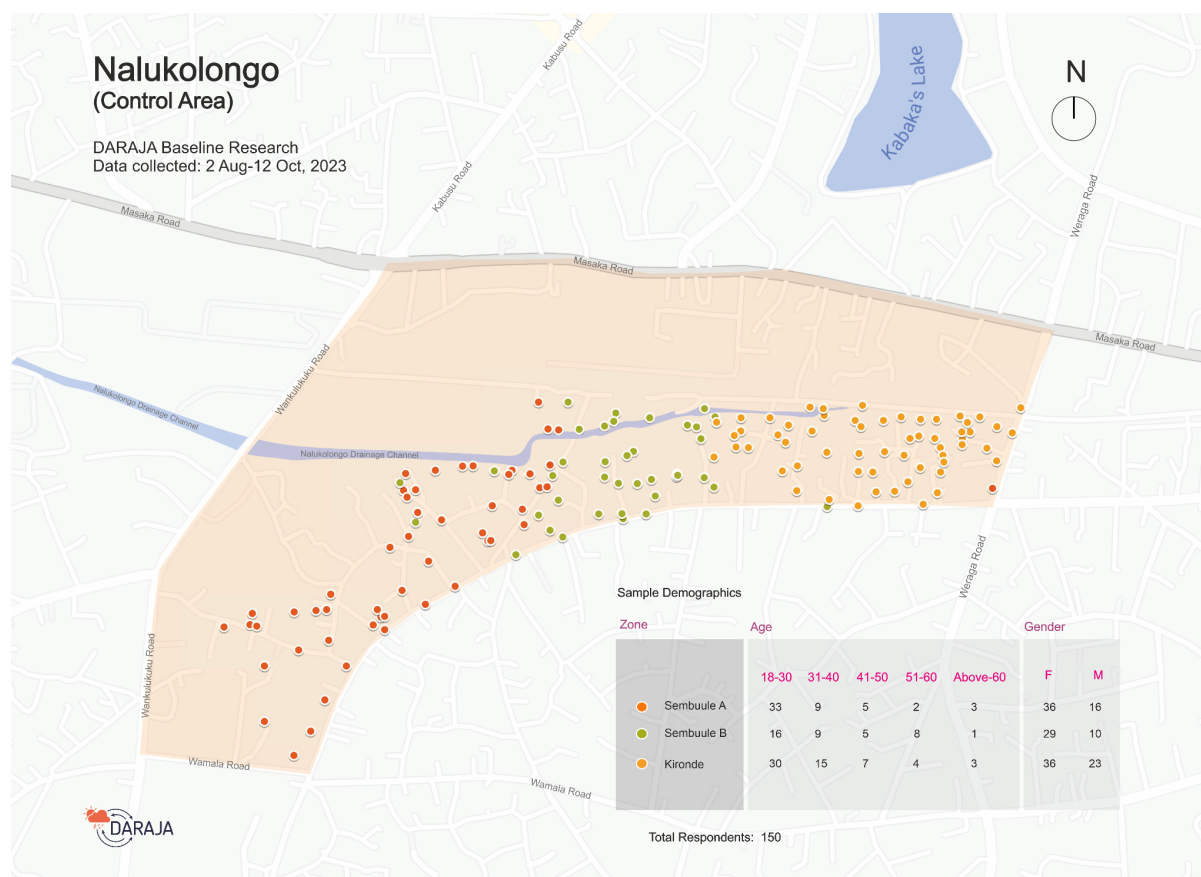


Figure 2: Map of data collection points in the Control area (Nalukolongo)

2.2 Methods of data collection

Mixed method approach was used to collect primary data. Firstly, the household survey was employed to collect quantitative data from households. Secondly, the qualitative data was collected through key informant interviews and Focus Group Discussions. Thirdly, Information Ecosystem Mapping was conducted through a participatory workshop with stakeholders from ACTogether and UNMA to further understand the key actors in the weather and climate information services value chain and current dissemination channels.

Table 2: Methods of data collection

	Household Survey	Focus Group Discussions	Key Informant Interviews
<u>Data Type</u>	Quantitative data	Qualitative data	Qualitative data
Number of respondents	449 respondents ¹ (299 from the project area; 150 from the control area)	64 participants across 7 groups (5 from the project area; 2 from the control area)	9 key informants

¹ A total of 450 respondents were surveyed. However, one respondent from project area was dropped due to missing data on key variables. As result, It a total of 449 respondents were analysed.

Sampling approach	Stratified random sampling using Arcmap and maps.me	Quota sampling	Quota sampling The key informants were selected based on their active role in producing and delivering weather and climate information in Kampala.
Tools and platforms	Household questionnaire was programmed in Kobo Collect and deployed to smart mobile phones	Otter for recording, and manual notetaking along with guiding questions	Otter for recording, and manual notetaking along with guiding questions

Household Survey

A total of 14 enumerators were trained and assisted to collect data from the residents. Apart from questions related to the perception of climate risks and experienced impacts of climate hazards, the household survey also explored current access and use of weather and climate information services. The household survey data will form the baseline indicators of the project in Kampala and will help to design tailored interventions. (See Annexes A and B for detailed sampling methodology and enumerator training process.)

Focus Group Discussions (FGDs)

FGDs were conducted to gather their views with regard to current access to, use of and perceived improvements to strengthen the delivery of weather and climate information services.

Focused Group discussions were held using guiding questions to get an in-depth understanding of dynamics within the communities in regards to the impacts of weather and climate hazards and risks, accessibility and usability of weather and climate services.

Table 3: Summary of FGDs Participants

Category engaged	Number of participants	Composition
Action Area (Bwaise)		
Local and Religious leaders	8	6 male & 2 female
Women	9	9 female
People with disabilities	9	6 female & 3 male
Business community and Teachers	11	8 female & 3 male
Youth	6	3 female & 3 male
Control Area (Nalukolongo- Kabowa parish)		
Local leaders, Religious leaders, youth, PWDs, School heads and Business community	12	12 male

Local leaders, Religious leaders, youth, PWDs,
School heads and Business community

9

9 female

Key Informant Interviews (KII)

The key informants were drawn from different stakeholders along the weather and climate information services value chain. The respondents were broadly categorised into three categories - WCI data providers, Decision makers and the media (channel for dissemination). Through a structured guide, these KII helped to gather the opinions of different stakeholders on the current status of weather and climate information access and use. The stakeholders also explained their current roles along the different stages of the weather and climate information value chain as well as ways to improve delivery of weather and climate services.

Table 4: Summary of Key Informant participants

Category of interviewee	Designation & Organisation	Gender
Data provider	Director Forecasts (UNMA)	Male
Media	Journalist (Bukedde Radio)	Female
	News Editor (BBS TV)	Male
	Program manager (Community radio)	Male
	Network Coordinator (NECJOGHA)	Male
Decision makers	Coordinator PWDs (Kawempe Division)	Male
	Chairperson (Local Council ii)	Male
	School Director (Success Primary school)	Male
	Program Manager, Climate and Environment (Red Cross)	Male
	Division Medical Officer (Kawempe Division, Kampala Capital City Authority (KCCA))	Male

2.3 Methods of data analysis

The quantitative data was analysed using descriptive statistics and probit regression model in Stata, while the qualitative data from KII and FGDs was analysed using thematic analysis. The first stage of thematic analysis was the development of a codebook in Excel. The second step involved capturing and grouping key themes and emerging issues (sub-themes) from participants per question from both the KII and FGD guides. The frequency of respondents who mentioned different themes was recorded in the third stage. Interesting quotes to support the observed themes and issues were also captured in the fourth stage. This process helped to describe responses rather than interpret or generalise the responses since these were opinions or participants' views to support the insights generated from quantitative data. A collaborative analysis was also conducted through a virtual workshop to capture and incorporate inputs from project partners (ACTogether, UNMA, and WISER). This workshop also served to validate baseline findings.

3 Results and analysis

3.1 Socio-economic characteristics of respondents

Geographic distribution

The survey respondents came from both the project area (Bwaise 3) and the control area (Kabowa which is in Nalukolongo). A total of 449 responses were analysed (299 from the project area and 150 from the control area). The respondents are distributed across all different zones in each settlement, namely: Bokasa, Bugalani, Kalimali, Katogo, Kawaala, and St. Francis in Bwaise 3 and Kironde, Sembuule and Sembuule B in Kabowa settlement. Most (135) of the respondents were from Katogo Zone and this is because Katogo is the biggest zone of the 6, more of a residential area with many structures housing people working from business centres and the least (3) were from Kawaala both in Bwaise 3 and this because the zone is more of a business place with fewer residents, hosts lumbering activities, but also a section of the zone is a wetland and these dynamics informed the interpolation of points. The geographic distribution is summarized in Table 3.

Table 5: Geographical distribution of the respondents

Settlement Name										
	<u>Bokasa</u>	<u>Bugalani</u>	<u>Kalimali</u>	<u>Katogo</u>	<u>Kawaala</u>	<u>St.</u> <u>Francis</u>	<u>Kironde</u>	<u>Sembuule</u> <u>A</u>	<u>Sembuule</u> <u>B</u>	<u>Total</u>
Bwaise 3	51	39	30	135	3	41	0	0	0	299
Kabowa	0	0	0	0	0	0	59	52	39	150
Total	51	39	30	135	3	41	59	52	39	449

Gender and household size

The female respondents constituted 67%, while 33% were male respondents. Among the female respondents, 69% were heads of households, and among the male respondents, 79% were heads of households. Among the respondents, the average household size is 4 members.

Education levels

The majority of the respondents (95%) have at least primary-level education. Among these, 52% attained secondary level education, 11% attained tertiary level education, and 32% attained primary level education. This signifies that most of the respondents are literate.

Disability and age distribution

The age group of most (45%) of the respondents were between 18-30 years, followed by 31-40 years (29%). The ages are summarized in the table below.

With regards to disability status, most of the respondents do not have any form of disability (94%), while 5% have some difficulties and 1% have a lot of difficulties in either hearing, seeing or any other form of disability.

+

Table 6: Demographic characteristics of respondents

Variable	Gender		
	<u>Total frequency</u>	<u>Female</u>	<u>Male</u>
<u>Highest level of education</u>			
No education	15	80%	20%
Pre-primary	10	70%	30%
Primary	143	71%	29%
Secondary	229	66%	34%
Technical college/tertiary	24	67%	33%
University	28	46%	54%
<u>Physical or mental difficulty</u>			
No difficulty	410	66%	34%
Some difficulty	39	79%	21%
A lot of difficulty	6	33%	67%
<u>Age (in years)</u>			
18 – 30	201	65%	35%
31 – 40	130	69%	31%
41 - 50	62	66%	34%
51 - 60	33	64%	36%
Above 60	23	72%	22%

Household income

With regards to income levels in Ugandan Shilling, most of the respondents (36%) have household monthly income below 100 000 followed by those with monthly income between 100 000 and 200 000 (27%) and then income levels between 200 001 to 300 000 (15%). The remaining proportion has household monthly income above 300 000. Nevertheless, just 6% of respondents have a monthly household income that is greater than the median monthly household income in Kampala, which is 667 000 Ugandan shillings.

Table 7: Average monthly household income (Ugandan Shilling)

Average monthly household income (Ugandan Shilling)	Percent
Below 100 000	36
100 000 – 200 000	27
200 001 – 300 000	15
300 001 – 400 000	10
400 001 – 500 000	5
500 001 – 600 000	1
Above 600 000	6

Sources of income

70% of the respondents agreed to provide information about their sources of income and most of them derived their incomes from casual labour (29%) and kiosk or roadside vending (29%). Others also get income from operating a shop (12%), dressmaking, mechanic or building (8%), remittances (7%), formally employed (5%), motorbike (boda boda) riding (4%) and urban farming (3%).

Key findings

- Majority of respondents are female (67%).
- Most respondents (95%) have at least primary level education and among these, 52% attained secondary level education.
- Most respondents (94%) do not have any form of disability and are aged between 18-30 years (45%).
- The average monthly income for most of the respondents is below 100 000 Ugandan Shillings.
- Most respondents derive their incomes from providing casual labour and roadside vending or operating a kiosk (29%).

3.2 Perceptions and impact of hazards

3.2.1 Perceptions of hazards

Flooding, disease outbreaks, and extreme cold events are the most common hazards that affect the residents of both the project area and the control area. Flooding has the highest prevalence in all areas. In fact, 74% indicated they had been affected by floods during the past 12 months. Among these respondents, 85% further indicated that when floods occur, they leave their houses and stay somewhere for a period of time. The floods mainly occur between November and July, with November and April reported to be the months with the highest prevalence of floods. Although about 27% of respondents indicated flooding is a natural occurrence, the majority perceived that floods are caused by unplanned infrastructure development (57%), poor solid waste management (49%), and clogged/narrow drainage systems (48%). In confirming floods as the most prevalent hazard, one of the key informants indicated that:

“For informal settlements (such as Bwaise), the most prevalent weather and climate hazard is floods.” (UNMA, Key Informant)

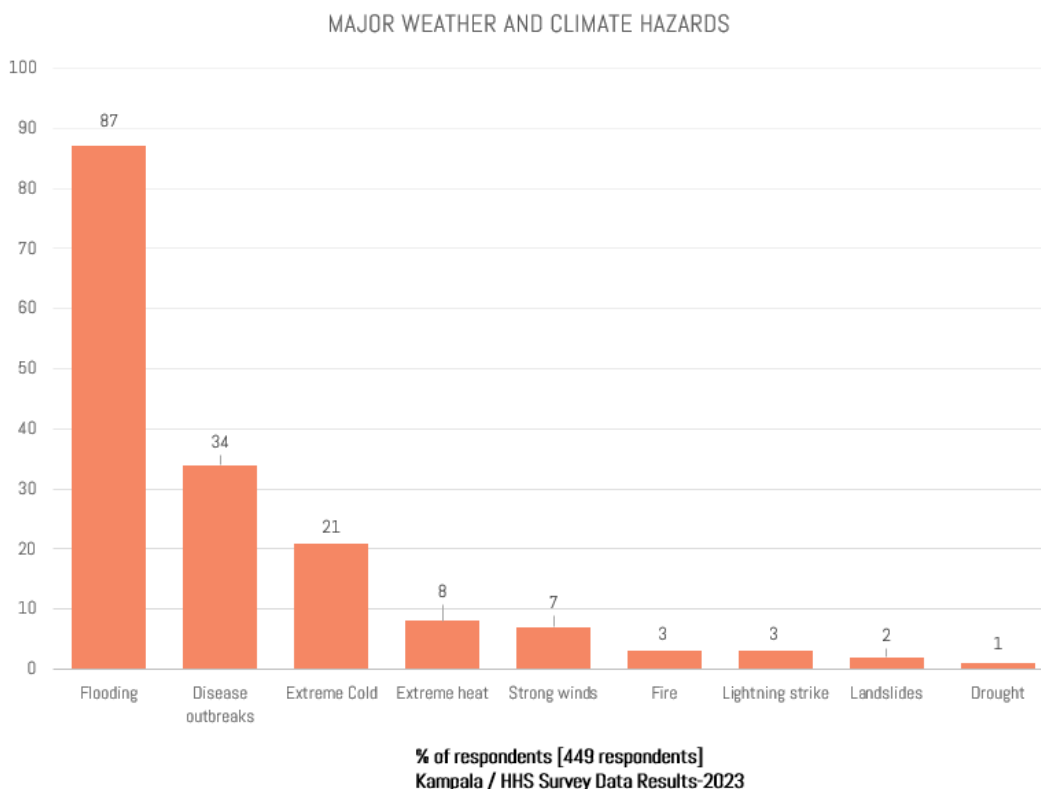


Figure 3: Major identified hazards affecting residents in both the project and control area

In emphasising the vulnerability of the settlement (Bwaise) to flooding, a representative of people living with disabilities has this to say:

“Floods are the most common weather and climate threat in my community, and specifically among the individuals I represent (People living with Disabilities-PWD). In certain cases, we experience flooding even when it does not rain in our community, but because our settlement is along a waterway or valley, we are most affected by floods even when it does not rain in our community.” (PWD, Key informant)

The floods mostly last up to 12 hours, and the majority (43%) of the respondents indicated that floods usually last for less than two (2) hours.

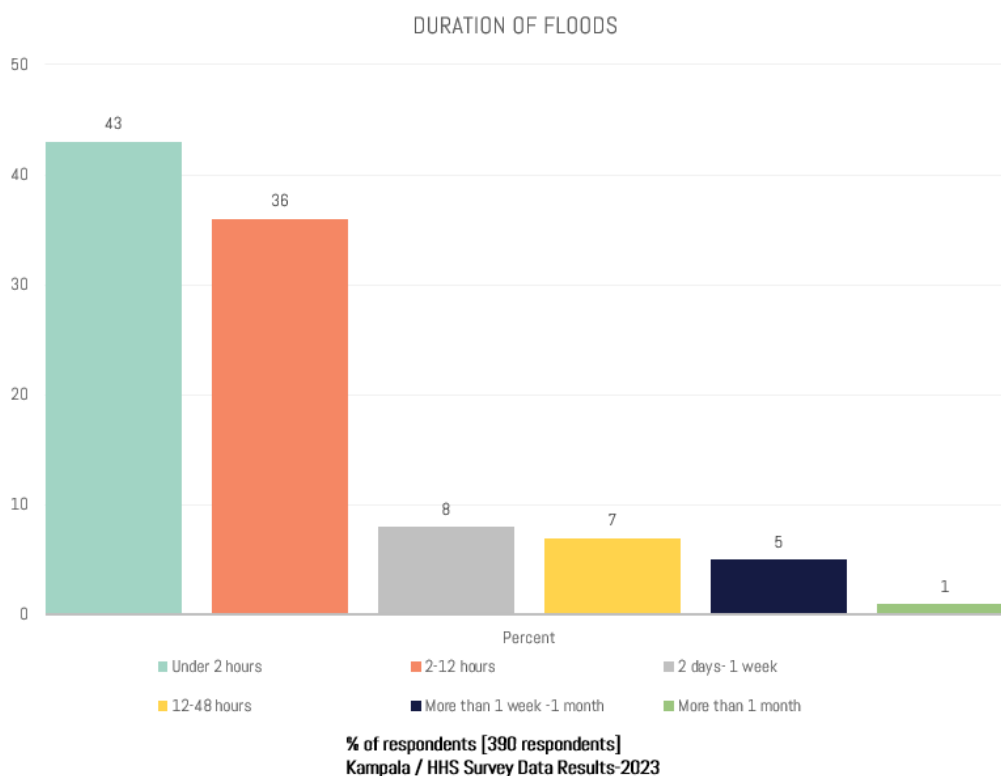


Figure 4: Duration of floods

Extreme heat and strong winds are also emerging hazards of concern to the residents. However, residents are not treating heat as a hazard of concern just yet. For example, one key informant has this to say:

“Heat is not a very big challenge to us because I think we have adopted it in our daily lives and learned to stay with it. Even people in the community are happy on hot days because they do not have any interruptions, whatsoever as work moves smoothly and business runs on a normal basis.” (LCII chairperson of Bwaise III Parish)

Disaggregating by age, most respondents (64%) were of the view that people below the age of 18 are the most affected by flooding as compared to other age groups. This could be because people in this category below the age of 18 are primarily children who have not yet developed coping mechanisms for floods as compared to adults. The challenges faced by the children due to their vulnerability include drowning during floods and being highly susceptible to hygiene-related illnesses such as typhoid, cholera, and malaria. Important to note is that inaccessibility to services such as education caused by floods (schools close down) also affects the children.

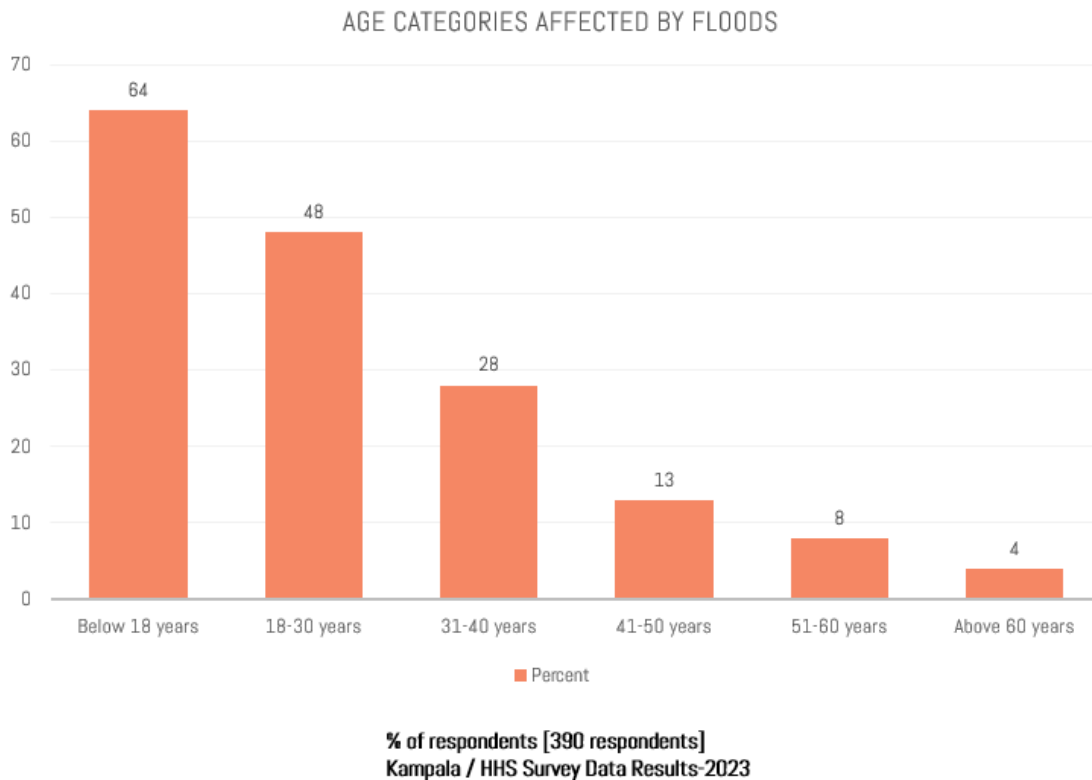


Figure 5: Age categories affected by floods

Although most respondents (63%) perceived that the government was acting effectively to reduce the impact of floods, they noted that there are still gaps that need attention. Firstly, the majority of the respondents indicated the need for improving solid waste management (68%), supporting affected families after flooding (50%), improving road access and bridges (49%), strengthening the **provision of early warning information** to residents (44%), and informing residents on safe places to build (28%).

Disease outbreak due to flooding

The respondents indicated that flooding also results in outbreaks of diseases, mainly malaria, typhoid, and diarrhoea. Apart from flooding, the participants during FGDs also indicated that heat and dust due to strong winds also cause disease outbreaks such as flu and cough. One of the FGD participants has this to say:

“Outbreak of diseases like flu, cough, skin rashes, and typhoid is yet another challenge faced by people in Nalukulongo. This is caused by both too much heat, dust blown by strong winds, and dirty water brought about by floods.” (FGD, Female Resident Nalukulongo).

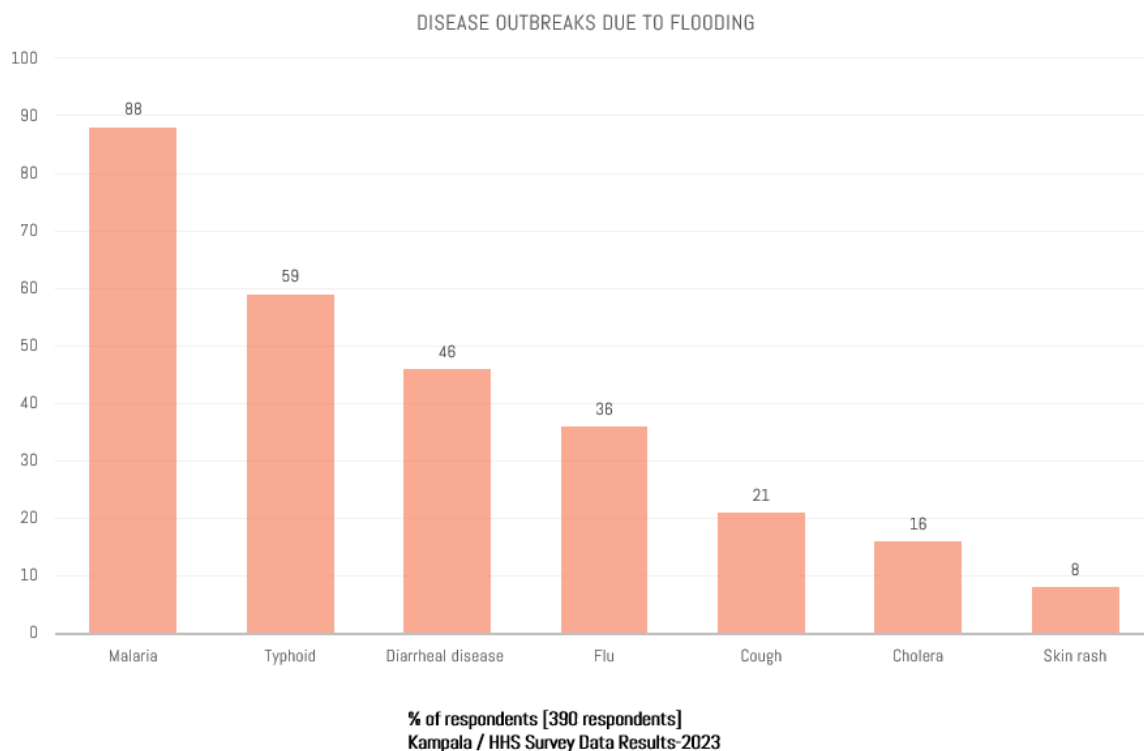


Figure 6: Disease outbreaks due to flooding

In emphasizing the implications of floods on disease outbreaks, one of the key informants has also alluded to the fact that:

“Floods have a range of consequences, including loss of life and property damage and disease outbreaks. Malaria, cholera, typhoid, diarrhoea, and dysentery are the most common disease outbreaks that we receive and report on. This is caused by the contamination of water sources, such as springs and wells, which are a popular supply of water in these areas; stagnant water, which is a breeding ground for mosquitoes; and a few fungal illnesses”. (KII, Division Medical Officer, Kampala Capital City Authority).

Key findings

- Flooding, disease outbreaks, and extreme cold events are the most common hazards that affect residents.
- 74% of respondents had been affected by flooding lasting up to 12 hours in the 12 months before the survey.
- The majority of respondents (64%) said that people under 18 years are disproportionately affected by these floods, with November and April reported to be months with the highest prevalence of floods.

3.2.2 Impact of floods and coping strategies

The floods resulted in loss of property (88%), sickness in the household (42%), and disruption of mobility (26%), among other impacts.

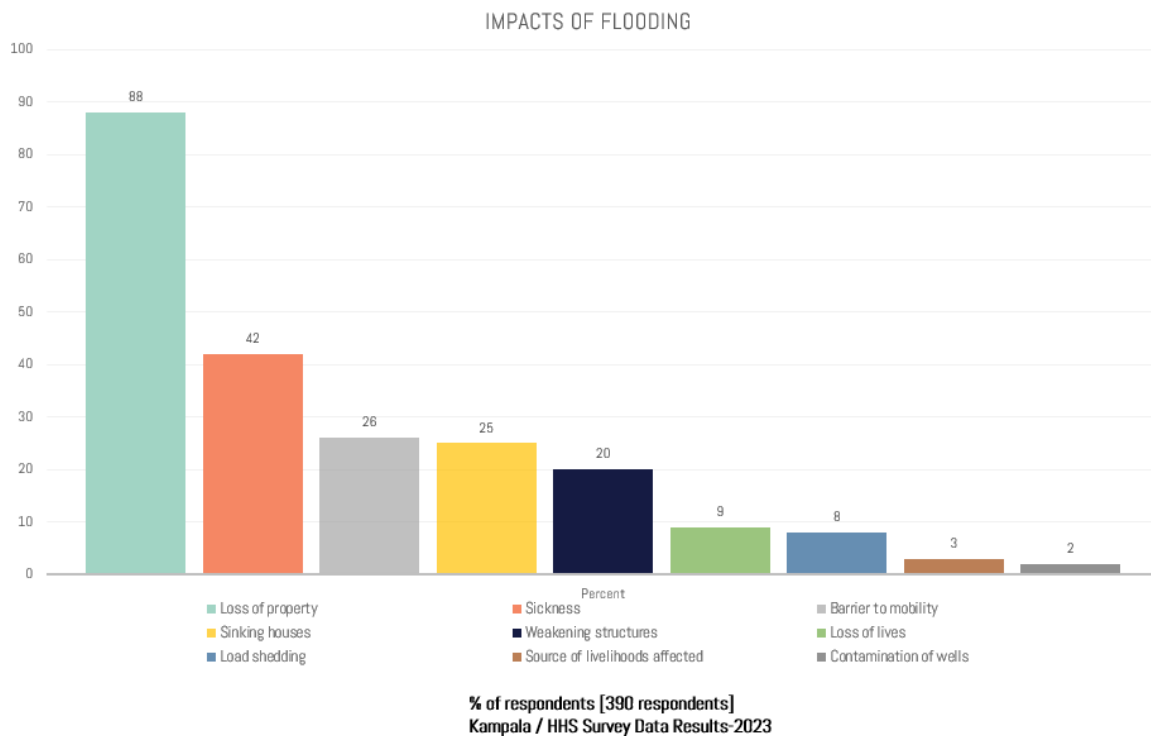


Figure 7: Impact of floods

Among those who experienced loss of property due to flooding, most male respondents were affected (91%) as compared to their female counterparts (81%). Disaggregating by age, all 16 respondents aged 60 and over experienced property damage due to floods, while 93% of respondents aged 51-60 also experienced property loss. Similarly, 88% of respondents in the 31-40 age group lost property due to flooding, while 86% of respondents in the 18-30 and 41-50 age groups also lost property. In terms of disability status, 89% of persons with no disability reported property loss, while 71% and 33% of respondents with some and a lot of difficulties, respectively, experienced property loss due to floods.

With regards to mobility disruption, 27% of female respondents experienced mobility difficulties due to flooding as compared to their male counterparts (22%). More respondents (47%) within the age group of 51–60 also experienced mobility difficulties due to flooding as compared to other age groups. About 29% of people with some or a lot of difficulties experienced mobility disruption, as compared to 26% of people with no form of difficulty.

Property and asset losses during flooding

Most of the respondents (67%) indicated that they lost furniture during flooding, followed by mattresses, televisions, radios, and utensils, respectively.

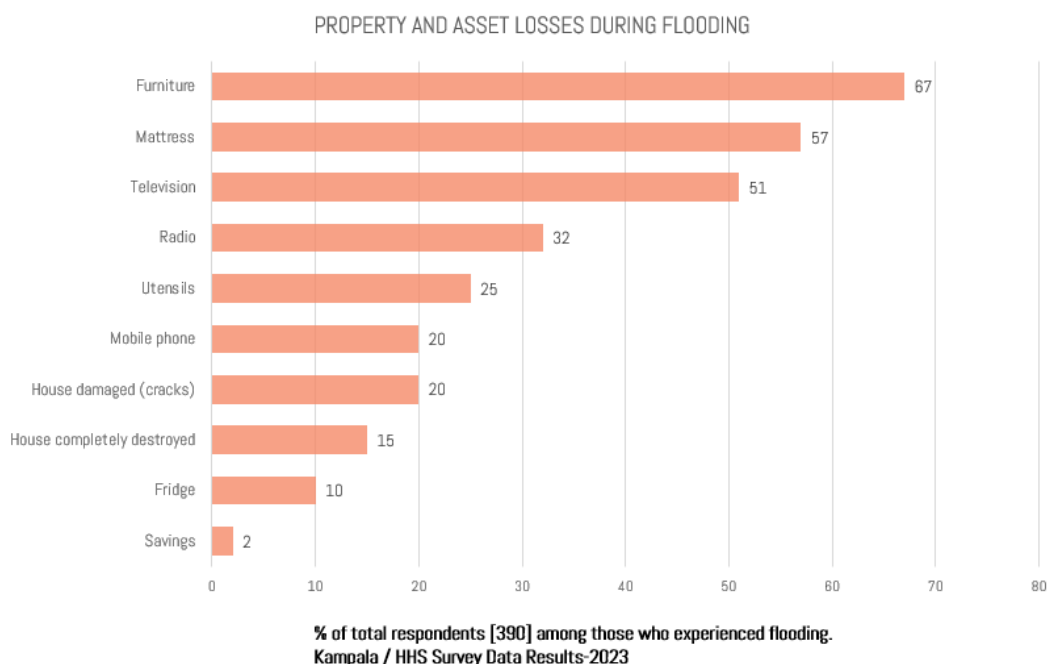


Figure 8: Property and asset losses due to flooding

Value of assets lost due to flooding

Most respondents lost furniture worth between 200 001 and 400 000 Ugandan Shillings (38%). Among the respondents with houses affected, most of their houses were completely destroyed and valued at 600 000 Ugandan Shilling and above (46%), and 27% indicated their houses were partially damaged, left with cracks that needed maintenance, and had a value of 50 000 – 200 000 Ugandan Shilling (27%).

Table 8: Asset values

Asset	% of respondents lost asset	Value (Ugandan Shilling)				
		Below 50 000	50 000 -200 000	200 001-400 000	400 001 – 600 000	600 000 and above
Furniture	67%	4%	26%	38%	21%	11%
House completely destroyed	15%	0%	20%	14%	20%	46%
House damaged	20%	6%	27%	25%	17%	25%
Television	51%	3%	43%	32%	13%	9%
Radio	32%	36%	50%	9%	5%	0%
Mobile phones	20%	5%	42%	27%	16%	9%
Fridge	10%	0%	15%	33%	19%	33%
Mattress	57%	8%	47%	37%	6%	2%
Utensils	25%	26%	56%	14%	4%	0%

Computer	<u>0.4%</u>	0%	0%	0%	100%	0%
Savings	<u>2%</u>	0%	100%	0%	0%	0%
Land	<u>0.7%</u>	0%	0%	0%	0%	100%

Costs of cleaning a house after flooding

Most of the respondents (50%) indicated that it cost them below 20 000 Ugandan shillings to clean the house after flooding, while 25% indicated that it cost between 20 000 and 40 000 on average.

Table 9: Average cost of cleaning the house after flooding

Average cost of cleaning the house after flooding (Ugandan Shilling)	Percent
Below 20 000	50%
20 000 – 40 000	25%
40 001 – 60 000	9%
60 001 – 80 000	5%
80 001 – 100 000	3%
None	8%

Disrupting food markets access

Most of the respondents (80%) also indicated that due to flooding, access to food markets locally was disrupted. This was mainly due to difficulties in accessing shops (84%), food products becoming more expensive (42%), no supplies (31%), and food production stopped (19%).

Coping strategies employed

To cope with floods at the household level, most of the respondents placed sandbags around the household structure and door entrances to prevent water from coming into the house (63%), and they also dug trenches around the house (52%). Propping up damaged houses (22%) and relocating to the highest place nearby (17%) are also key coping strategies being employed by the residents of both settlements. More research needs to be done to assess the extent of the benefits of these coping mechanisms.

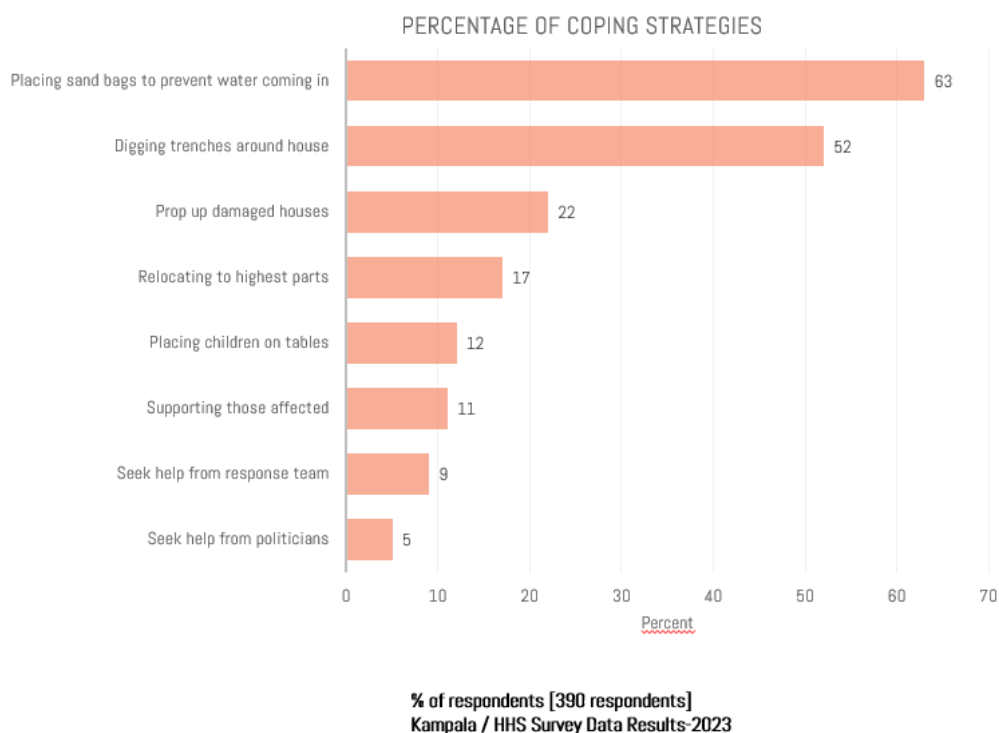


Figure 9: Coping strategies implemented to reduce the impacts of flooding

At the community level, most respondents indicated that people usually clear drainage channels (84%), expand drainage channels (47%), level compounds/cover ditches to avoid water from stagnating around houses (46%), dig new drainage channels (45%), realign drainage channels (18%), and waterproof the compound walls (8%). Most of these actions are more anticipatory since most respondents take these actions before the rainy season (56%).

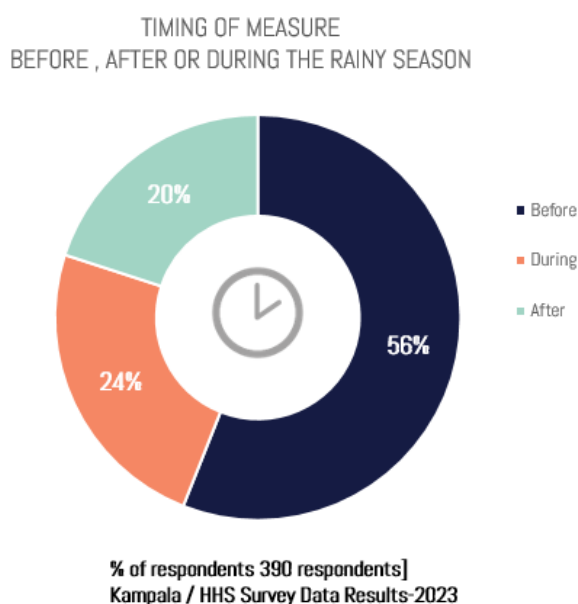


Figure 10: Timing of measures

Key findings

- Most respondents (86%) indicated they were severely affected by flooding during the past 12 months.
- The floods resulted in loss of property, mainly furniture; disease outbreak (malaria and typhoid); and disruption of mobility and food market access.
- To cope with floods at the household level, most respondents placed sandbags to prevent water from coming into the house (63%) and dug trenches around the house (52%).
- At the community level, most respondents indicated that people usually clear drainage channels (84%).
- To clean the house after flooding, most respondents (75%) spent less than 40 000 Ugandan shillings, while 17% incurred more than 40 000 Ugandan shillings.

3.3 Access to weather and climate information services

3.3.1 Current state

59% of respondents have access to weather and climate information (WCI). Among them, the majority perceive the weather forecasts to be accurate (56%) and very accurate (21%). Concurrently, 91% also share WCI, mainly with family members or friends (83%) and neighbours (77%). However, only a small proportion (29%) know that UNMA is responsible for the production and delivery of weather and climate information.

Table 10: Current State with regards to access to, understanding of and use of WCI

Percentage of respondents who:	Percent
access WCI	59%
If access, share the WCI	91%
If access, understand the weather information very well	44%
If access, understand the potential impacts of weather warnings very well	40%
If access: a. Daily	49%
b. Every few days	27%
c. Weekly	10%

d. 6 hours forecasts	9%
e. For high-impact events	8%
f. Monthly	5%
If access, Use the WCI	94%
Use DARAJA Climate Information Services ²	0%

The key informant from UNMA also confirmed the current access statistics:

“I can’t tell the numbers and specific percentages off the head but we have tried the very best we can to make ourselves visible and disseminate the data produced. But as far as I know, we have made it to 50%-60% and I know that is not bad so far; we are progressing.”
(UNMA, Key Informant)

Disaggregating access to WCI by gender, most male respondents (69%) have access to WCI as compared to their female counterparts (54%). Concurrently, the respondents within the age groups of 51-60 (73%) and 18–30 (63%) have more access to WCI compared to other age groups. From a disability perspective, 67% of respondents with a lot of difficulties, 63% of people with some difficulties, and 59% of respondents with no difficulty have access to WCI.

Disaggregating access by area, 60% of respondents from the project area have access to WCI, while 57% of respondents in the control area have access to WCI.

Table 11: Access to WCI disaggregated by project and control area

Access to WCI	Settlement name	
	Project area (Bwaise 3)	Control area (Kabowa)
Yes	60%	57%
No	39%	42%
Do not know	1%	1%

Apart from daily weather forecasts, which 49% of the respondents who access WCI indicated they receive, UNMA also produces and disseminates monthly and seasonal forecasts. In describing the forecasts products and related services that UNMA produces for the Kampala region, the key informant from UNMA indicated that:

“For Kampala region, UNMA produces and delivers 6-hour forecasts, daily forecasts, 3-day forecasts, monthly forecasts, seasonal forecasts, and early warnings.” (UNMA Key Informant).

² DARAJA CIS does not exist in August 2023 at the time of the baseline. This indicator will be used for impact assessment at the end of the project.

Factors affecting access to WCI

The difference in access to WCI between female and male respondents is statistically significant. The results showed that the likelihood of accessing or receiving WCI decreased by 11% among female respondents compared to male respondents. This shows that female respondents are less likely to receive WCI compared to their male counterparts, both in the project and control areas. Nevertheless, the difference in access to WCI between respondents with no form of disability and respondents with some or a lot of difficulty is not statistically significant.

Table 12: Probit regression results on factors affecting access to WCI

Variable	Marginal effects	Robust Standard Errors	P-value
Settlement name (1= Bwaise, 0 = otherwise)	0.04	0.05	0.49
Years in Settlement (count)	0.02	0.01	0.05*
Gender (1=Female, 0 = otherwise)	-0.11	0.05	0.03**
Access to Mobile phone (Yes=1, 0 = otherwise)	0.23	0.14	0.09*
Access to Television (1 = Yes, 0= otherwise)	0.12	0.06	0.05*
Access to Radio (1 = Yes, 0= otherwise)	0.10	0.05	0.06*
Primary (1=Primary level education, 0 =no education)	0.14	0.10	0.18
Secondary (1=Secondary level education, 0 = no education)	0.17	0.11	0.12
Tertiary (1=Tertiary level education, 0 = no education)	0.11	0.11	0.33
A lot of difficulty (1=Yes, 0 = otherwise)	0.21	0.22	0.35
Some difficulty (1=Yes, 0= otherwise)	0.08	0.10	0.45
18-30 age group (1=Yes, 0=above 60 years)	0.23	0.11	0.05*
31-40 age group (1=Yes, 0=above 60 years)	0.09	0.11	0.45
41-50 age group (1=Yes, 0=above 60 years)	0.14	0.11	0.21
51-60 age group (1=Yes, 0=above 60 years)	0.25	0.10	0.01**

*** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$

On the other hand, access to a mobile phone, television, and radio increases the probability of receiving WCI by 23%, 12%, and 10%, respectively. This also concurs with descriptive statistics, which showed that most respondents receive WCI through media channels, mainly television and radio. The probability of receiving or accessing WCI also increases by 2% as years of living in the settlement increase. This suggests that residents with more years of staying in Bwaise, for example, are more likely to access WCI compared to residents who stayed in Bwaise for a few years. Thus, residents with more years staying in the settlement are aware of sources of WCI and have a strong social network where they can receive WCI. At the same time, residents within the age groups of 18-30 years and 51-60 years are more likely to receive WCI (by 23% and 25%, respectively) compared to residents above 60 years. This implies that youth and residents aged 51-60 years listen more to the radio and watch television and hence receive WCI compared to the elderly.

Understanding weather forecast information

The majority (96%) of the respondents indicated that they have some understanding of the WCI, with 52% understanding only parts of the information (did not fully understand) and 44% understanding the WCI very well.

Disaggregating understanding of WCI by gender, most (51%) of the male respondents understood WCI very well as compared to their female counterparts (39%). Again, most of the respondents (48%) within the age groups of 31-40 and 18-30 (46%) understood the WCI very well as compared to other age groups. Only a very small percentage of the respondents with some or a lot of difficulties understood the WCI very well (29%) as compared to those with no form of difficulty (45%).

Disaggregating understanding by area, 97% of respondents from the project area understood WCI, and among them, 47% understood the information very well. On the other hand, 94% of respondents in the control area understood WCI, and among them, 37% understood the information very well.

Table 13: Understanding WCI disaggregated by project and control area

Understanding WCI	Settlement name	
	Project area (Bwaise 3)	Control Area (Kabowa)
I did not understand the information at all	1%	0%
I understand only parts of the information (did not fully understand)	50%	57%
I understand the information very well	47%	37%
Not sure	2%	6%

Understanding the potential impacts of the weather forecasts (warning)

Most respondents (93%) indicated that they have some understanding of the potential impacts of weather forecasts (early warning), with 53% understanding only parts of the information (did not fully understand) and 40% understanding the information very well.

Table 14: Understanding the potential impacts of the weather forecasts

Level of understanding	Percent of respondents
I did not understand the information at all	2%
I understand only parts of the information (did not fully understand)	53%
I understand the information very well	40%
Not sure	5%

Disaggregating understanding of potential impacts by gender, most (48%) of the male respondents understood the potential impacts of weather forecasts very well as compared to their female counterparts (36%). Again, most of the respondents (53%) within the age group of 18-30 understood the potential impacts very well as compared to other age groups. Twenty-nine (29%) of the respondents with some or a lot of difficulties understood the potential impacts of weather warnings very well as compared to those with no form of difficulty (41%).

Source of weather and climate information

Most of the respondents currently receive weather and climate information from national media, neighbours, social media, family members, or friends. These channels are mainly used because of language (use of local dialect-Luganda) (43%), the information is easy to understand (19%) and trust in the source (13%). One of the local leaders during an FGD alluded to the fact that trusting the source of WCI is integral for residents to use the information:

“When it is a government media communication, the information is somehow trusted.” (FGD, Local leaders)

The key informants from media networks such as NECJOGHA also confirmed that they provide weather forecast information to residents through broadcasting and different social media platforms and emails. In emphasising how farmers use the weather forecasts disseminated through media houses and the available platforms for feedback, one of the key informants has this to say:

“The weather forecast information produced by Meteorological Authority is part of our content given to the audience daily. It is also a two-way process, as we also collect feedback from the audience through user engagement sessions.” (Key informant from NECJOGHA Media).

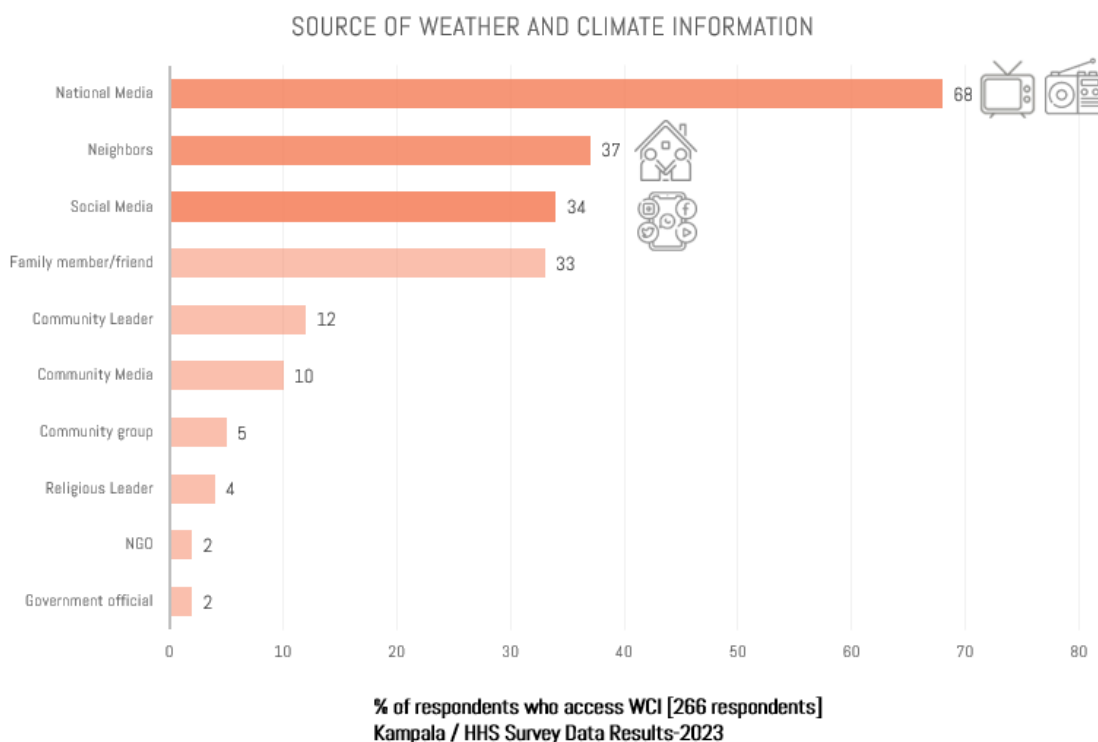


Figure 11: Source of weather and climate information

The key informant from UNMA also confirmed that they disseminate WCI through national media channels like national television and radio stations.

“There are different dissemination platforms we employ to share WCI, such as TV channels, which are national TV, as well as some other private TV stations, radios, telegrams, different authorities, and some NGOs, both national and international, like Red Cross and the Food and Agriculture Organization of the United Nations.” (UNMA Key Informant)

However, in general, most people receive information or news through television (57%), radio (26%), and SMS (5%). The majority of the respondents (75%) have access to a working television, and they watch television at night (42%), every day (91%), and at home (93%). The most-watched television station is Bukedde. Most (57%) respondents also have access to a radio, and they listen to the radio mostly at home (74%) during the morning (38%). Most respondents listen to Bukede Radio (32%), CBS Radio (28%) and Radio Simba (21%). Other radio stations include Akabozi FM, Beat FM, and Salt Radio. About 96% of the respondents also have access to a mobile phone.

Table 15: Mobile phone access status

Percentage of respondents who:	Percent
Have access to a mobile phone	96%

If access, own mobile phone	93%
If access, share mobile phone	3%
If access, smart mobile phone	47%
If access, feature phone	53%
If access: a. does not have phone signal	31%
b. does not have access to electricity to charge	18%
c. does not have sim card	7%
If smart phone (a) does not have access to mobile internet	55%
(b) speed of internet is slow	29%

Preferred dissemination channels

Most of the respondents indicated that they prefer to receive weather and climate information through television (67%) and radio, especially community radio stations (63%). Mobile phone calls, the use of a loudspeaker or megaphone, and SMS are also preferred channels.

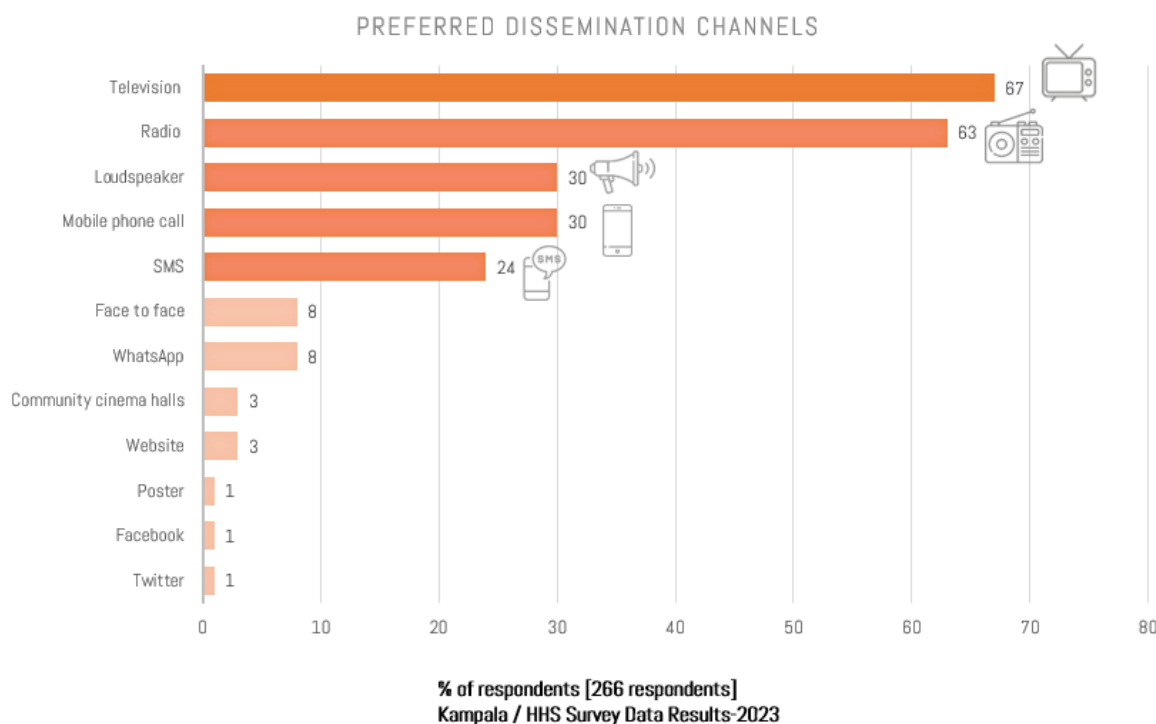


Figure 12: Preferred dissemination channels

Preferred lead time for rainfall forecast

The majority of the respondents prefer to receive rainfall forecasts with a lead time between 2 and 12 hours (33%).

PREFERRED LEAD TIME FOR RAINFALL FORECAST

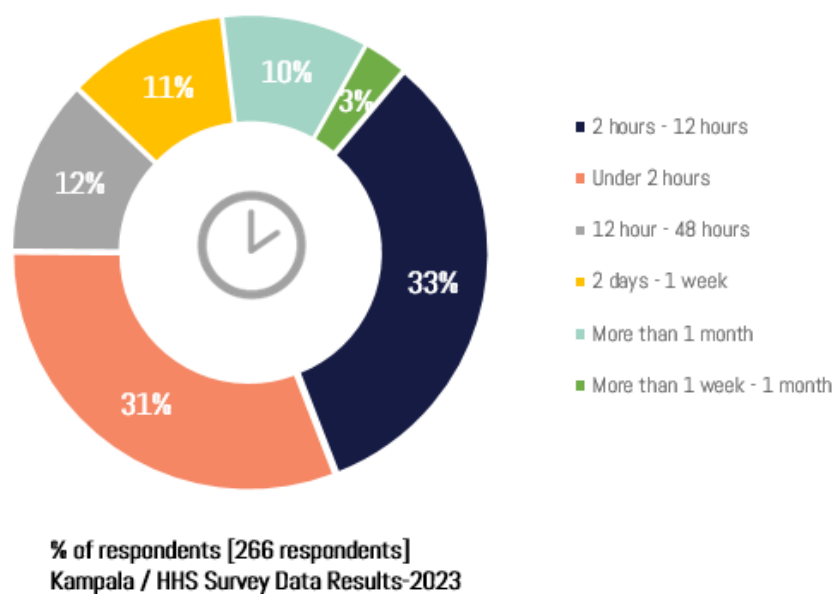


Figure 13: Preferred lead time for rainfall forecasts

Preferred lead time of heat forecasts

Just like rainfall forecasts, the majority of the respondents prefer to receive heat forecasts with a lead time between 2 and 12 hours (36%).

PREFERRED LEAD TIME OF HEAT FORECASTS

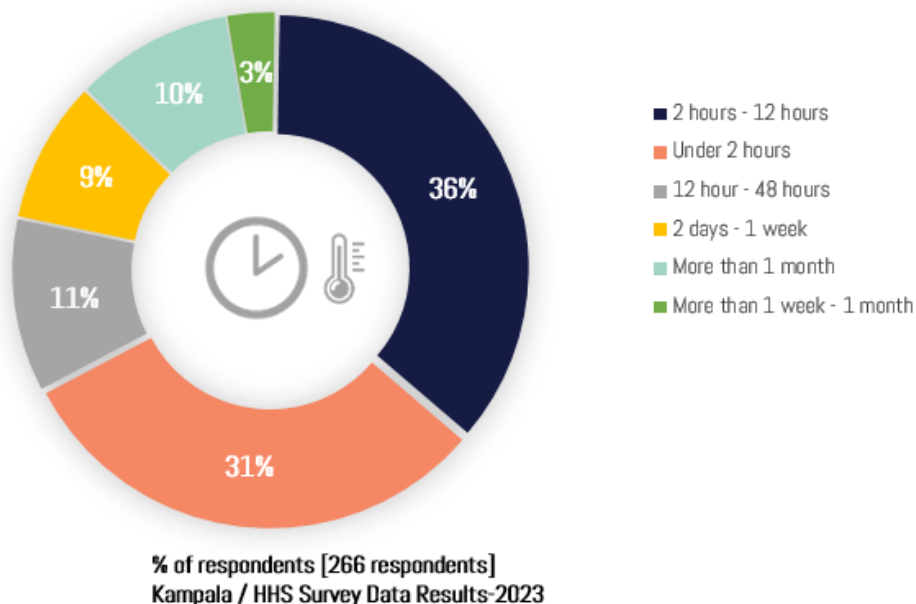


Figure 14: Preferred lead time for heat forecast

3.3.2 Barriers to access and use

The participants during the FGDs identified the lack of trust as a key barrier to the use of WCI. However, the participants indicated that if accurate weather forecasts are provided with a long lead time, they will use the forecasts to implement early actions.

3.3.3 User preferences

The most suggested improvement is to localise weather and climate information (75%), followed by the use of media channels commonly accessed by residents in the settlements (61%).

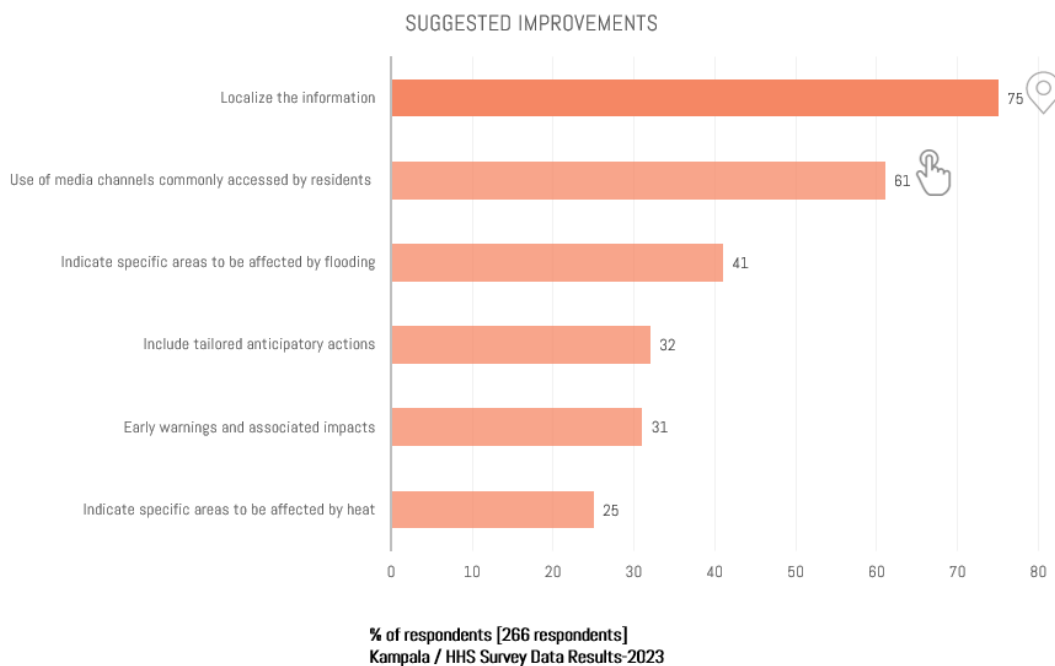


Figure 15: User preferences on WCI

3.3.4 Costs (access costs)

No direct costs were reported, which suggests that the respondents receive WCI from UNMA for free, just like any other public good or service.

Key findings

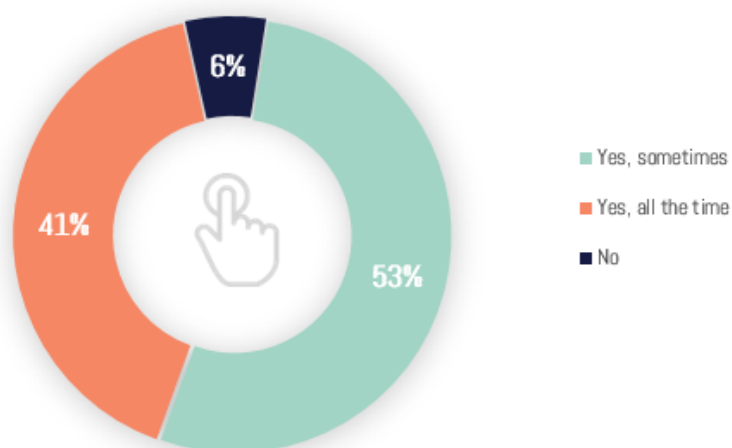
- 59% of the respondents have access to weather and climate information.
- However, among those who receive WCI, 44% understand the information very well, and 40% understand the potential impacts of forecasts very well.
- Most of the respondents currently receive WCI from national media channels, mainly television and radio stations.
- Television and radio, especially community radio stations, again remained the most preferred channels to receive WCI among the residents.
- Mobile phone calls, use of loudspeakers or megaphones, and SMS are also preferred channels.
- The majority of the respondents prefer to receive rainfall and heat forecasts with a lead time between 2 and 12 hours.

3.4 Actionability of weather and climate services

3.4.1 Current state

Among the respondents who receive WCI, 94% use the information to take preparatory or anticipatory actions.

USE OF WCI TO TAKE PREPARATORY/EARLY/ANTICIPATORY ACTIONS



% of respondents [266 respondents]
Kampala / HHS Survey Data Results-2023

Figure 16: Current use of WCI

Disaggregating use of WCI by area, 92% of respondents from the project area use WCI, and among them, 45% use the information all the time. On the other hand, 97% of respondents in the control area use WCI, and among them, 33% use WCI all the time.

Table 16: Use of WCI by area

Use WCI	Settlement name	
	Project area (Bwaise 3)	Control Area (Kabowa)
No, not at all	8%	3%
Yes, all the time	45%	33%
Yes, sometimes	47%	64%

Disaggregating use of WCI by gender, most (56%) of the female respondents use WCI all the time to take early actions as compared to their male counterparts. Among all the age groups interviewed, most of the respondents (52%) within the age group of 18-30 use the WCI all the time as compared to other age groups. However, only a very small proportion (6%) of the respondents with some or a lot of difficulties use WCI to take early action as compared to those with no form of difficulty.

Anticipatory action implemented

Based on the weather forecasts received, most respondents moved their belongings to safe places (65%), cleaned drainage channels to avoid flooding (41%), and repaired houses (31%). Participants in FGDs also alluded to similar early actions, stating that when floods are expected, they store vital documents and goods in secure areas and perform house renovations such as installing electricity plugs at higher levels and cementing walls.

Apart from residents, the schools also use WCI to inform their day-to-day activities and schedules. For example, one of the key informants, who was also a director of a school in the project area, alluded that:

“We extensively rely on weather forecast information at school to plan daily and weekly activities. For example, if we hear that it will rain heavily, we either notify students not to come to school or send them home if they are already at school.” (School Director, Success Primary School)

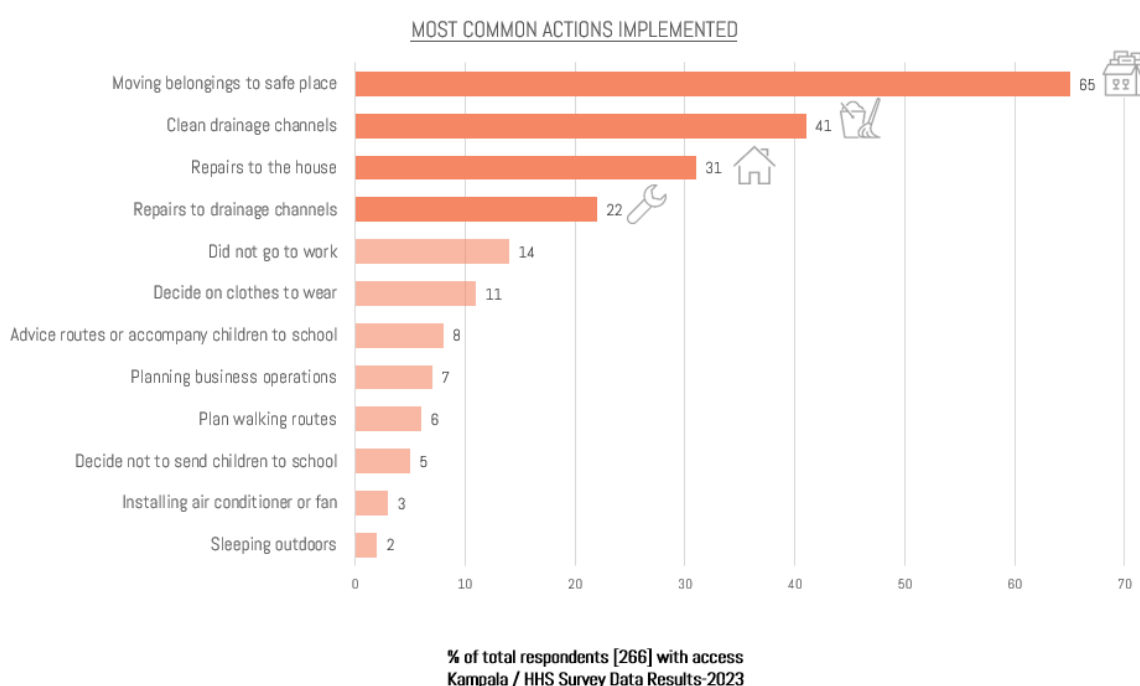


Figure 17: Anticipatory or early actions implemented

If extreme heat is anticipated, respondents indicated that they install air conditioners or fans and sleep outdoors. Furthermore, FGD participants responded that if excessive heat is expected, they will drink plenty of water, stay indoors, open doors and windows for air, and use umbrellas/ sunglasses/ light clothes. Nonetheless, because household survey respondents did not react to questions concerning excessive heat and the results of focus groups suggest that most people do not currently consider heat as a climate concern, there is a need to raise awareness about extreme heat. For example, one of the FGD participants stated:

“Even though it’s hot, it has never made me fail to go to work.” (FGD, Female Resident Nalukolongo)

Concurrently, one of the key informants has this to say:

“Heat is not a very big challenge to us because I think we have adopted it in our daily lives and learned to stay with it. Even people in the community are happy on hot days because they do not have any interruptions whatsoever as work moves smoothly and business runs on a normal basis.” (LCII chairperson of Bwaise III Parish).

Separately, the weather forecast information is also being used to inform strategic decisions in the health sector. One of the key informants from the health sector has this to say:

“We use weather forecast information to appropriately plan for Government-assisted health centres, such as during rainy/wet seasons. Based on early warning information for floods, for example, we know that people are affected by diseases such as typhoid, malaria, dysentery, and even cholera, so the department purchases more drugs for treating those diseases than others because the likelihood of having patients with those diseases is high, so weather forecast information is very effective and useful in our operations”, (KII, Division Medical Officer, Kampala Capital City Authority).

3.4.2 Key enablers to understand the information

The respondents also identified key enablers for them to understand the information based on weather forecasts they receive. Among other factors, the language used in this case, the use of local dialect in WCI dissemination, was identified as a key enabler for residents to understand the forecast information and hence stimulate early actions. One of the FGD participants emphasised the need to simplify the forecast message for people to understand and take preventative action:

“People don’t understand the information because of the science used, and hence they don’t take it seriously.” (FGD, Local Leaders Nalukolongo)

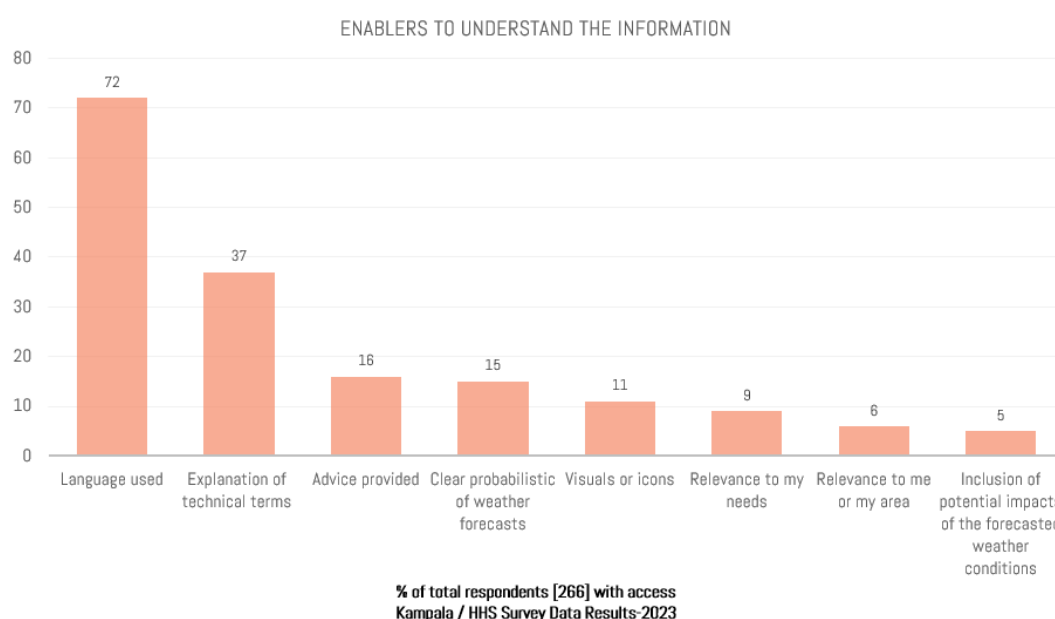


Figure 18: Key enablers to early actions

3.4.3 Remaining gaps for early actions to be effective

Although 63% of respondents perceived that the government was acting effectively to reduce the impacts of flooding in their settlements, most of them (79%) felt that the government needed to improve the drainage system. Concurrently, 44% of the respondents were of the opinion that the provision of early warning information to people living in flood-prone areas should be strengthened.

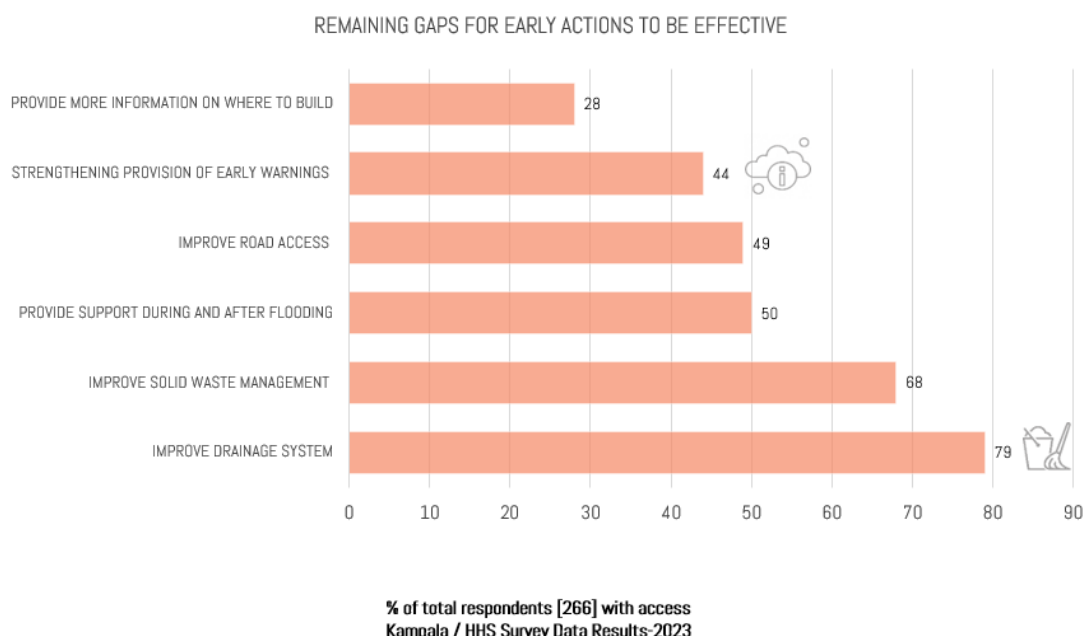


Figure 19: Remaining gaps for early actions to be effective

Given that the participants during FGDs described the project area as a slum settlement that's densely populated, with poor waste management and housing facilities, improving solid waste management and strengthening the delivery of early warning information cannot be overemphasized to support effective early actions.

3.4.4 Costs (for actions)

Most of the respondents (73%) incurred costs below 100, 000 Ugandan Shilling for implementing early actions based on the WCI they received. According to the results from the focus groups, residents incur expenditures to take early action, primarily by purchasing items such as sandbags and also by paying others to undertake modest repairs on their homes.

Table 17: Costs incurred to implement early actions

How much did taking this action cost you?	Percent of respondents
Below 100,000	73%
100,000 - 300,000	18%
300,001 - 500,000	7%
Above 500,000	2%

Key findings

- Among the respondents who receive WCI, 94% use the information to take preparatory or anticipatory actions.
- The most implemented preparatory actions are: residents moved their belongings to safe places (65%), and they cleaned drainage channels to avoid flooding (41%).
- Most of the respondents (73%) incurred costs below 100,000 Ugandan Shilling for implementing these early actions.

4 Conclusions

67% of the households surveyed were female, while 33% were male. Furthermore, the statistics suggest that 95% of respondents completed primary-level education, with 52% completing secondary school. Concurrently, 45% of respondents were aged between 18 and 30, and 94% of respondents did not have any form of disability. The statistics also show that the majority of respondents have an average monthly household income of more than 100,000, with 37% having a monthly household income greater than Uganda's average monthly household income of 190,000 Ugandan Shillings. However, as a cluster of respondents, 36% reported a household income of less than 100,000 Ugandan Shillings. When asked about their main sources of income, 26% stated that they make money from casual work and roadside vending or operating kiosks.

The most prevalent hazards that the residents face include flooding, disease outbreaks, and extreme cold events. 74% of respondents have been affected by flooding lasting up to 12 hours in the past 12 months. The floods caused property damage, primarily furniture, outbreaks of diseases (malaria and typhoid), and disruptions in mobility and food market access. When asked about their feelings, 64% of those interviewed said that people under the age of 18 are disproportionately affected by these floods, which typically occur between November and April each year. As a flood mitigation approach at the household level, 63% of respondents said they used sandbags to keep water out of the house, while 52% dug trenches around their residences. At the community level, 84% of the respondents indicated that people usually clear drainage channels.

59% of respondents have access to WCI, and the majority of them get it from national media outlets, mostly television and radio stations. Television and radio, especially community radio stations, remained the most preferred channels to receive WCI among the residents. Mobile phone calls, the use of a loudspeaker or megaphone, and SMS are also preferred channels to receive WCI. The majority of respondents indicated a preference for receiving rainfall and heat forecasts with a lead time of 2 to 12 hours. However, among those who receive WCI, 44% understand the information very well, 52% understand only parts of the information, and 4% of the respondents have challenges understanding the information.

Among those who access WCI, 94% use the information to take preparatory actions such as moving possessions to safe locations (65%) and cleaning drainage channels to avoid flooding (41%).

References

Uganda Bureau of Statistics (UBOS), 2021. Uganda National Household Survey 2019/2020. Kampala, Uganda; UBOS

Annexes

Annex A - Household survey sampling

The sampling of households was randomized and to eliminate chances of bias in the selection of respondents, points were randomly interpolated using Arcmap and maps.me. This interpolation was done with respect to the nature of the project as well as an analysis of the available landmarks and features within the project area to avoid points falling on non-responsive places (Non-households) such as schools, wetlands and industrial zones. The points were finally distributed to the Maps.me environment and added to the GIS environment to create a base map which was then uploaded on phones and tabs to locate the households to be interviewed.

Annex B - Training of data collectors

The data collection team from both Action and Control areas comprised of 14 enumerators (8 male and 6 female). They were mobilized through local leaders and Federation structures, introduced to DARAJA and the baseline survey objectives, and trained in data collection skills for Household interviews and FGDs including the use of tablets, Maps.me and GPS. A pretest of data collection tools (questionnaire and guiding questions) was done to ensure that any prevailing inconsistencies in the questionnaire were identified and rectified prior to actual data collection and that all data collectors were familiar with all the tools. The trainees were later introduced to group role plays of two persons (Interviewer and interviewee) as part of practical sessions after the theoretic sessions with the aim of instilling data collection tools and user confidence amongst all trainees ahead of the actual fieldwork.