



# DISASTER RISK ASSESSMENT

## ASSESSMENT OF COMMUNITY COPING MECHANISMS IN FLOOD PRONE AREAS IN SOMALIA

2023

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Mogadishu Head Office  
Adan Abdulle International Airport (AAIA)  
Mogadishu, Somalia  
Email: [IOMSomaliaDTM@iom.int](mailto:IOMSomaliaDTM@iom.int)  
Website: [dtm.iom.int/somalia](http://dtm.iom.int/somalia)

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# EXECUTIVE SUMMARY

Somalia grapples with significant challenges stemming from natural disasters, which disrupt communities and result in economic losses<sup>1</sup>. Repeated disruptions caused by cyclical weather patterns deplete emergency reserves and impede long-term recovery efforts. The compounding effect of ongoing conflict and political instability further hampers disaster preparedness and response, hindering the ability to address flood causes. The perpetual cycle of responding to and recovering from these recurring disasters, often dependent on external humanitarian assistance, impedes efforts to cultivate sustainable resilience within these communities. Such continuous strain disrupts social networks and traditional support systems essential for recovery and resilience<sup>2</sup>. As a result, communities often prioritize immediate survival needs over long-term planning and development, weakening their capacity to cope with future disasters and perpetuating a cycle of vulnerability<sup>3</sup>.

The assessment of community coping mechanisms conducted during the El Niño period of 2023 sought to evaluate the strategies employed by communities impacted by flooding along River Juba and Shabelle. The study specifically aimed to evaluate the coping strategies utilized by communities in the flood-prone districts of Baardheere, Balcad, Beledweyne, Bulo Burto, Doolow, and Jowhar districts during previous flood events and the El Niño of 2023. The analysis examined how these communities leveraged various economic, physical, structural, social, and institutional factors to cope with and adapt to the impacts of recurrent natural disasters like floods as part of a broader effort to enhance the understanding of disaster mitigation measures within Somalia's Disaster Preparedness and Disaster Risk Reduction (DRR) framework. The findings underscored the urgent need for targeted interventions to bolster disaster resilience and strengthen community coping strategies amidst the challenges posed by the recurring flood cycles in Somalia.

## Summary of Key Findings

### Perception and Impact of Flooding:

- The top three protracted cyclic climatic patterns highlighted across the six districts are increased rainfall (33%) associated with flooding, drought (28%) due to decreased rain, and increased temperatures (19%).
- Flooding-related impacts affected nearly all respondents, with 93% reporting being affected leading to 81% abandoning their livelihoods. Notably, more than half of the respondents (57%) indicated that they did not leverage their past experiences to inform their preparedness and response strategies for the 2023 El Niño event. This suggests a need to strengthen the integration of lessons learned from previous disasters into community-level disaster risk reduction efforts.
- 47% of sampled household population estimated to be around 73,211 individuals, were aware of the existence of an early warning system. On average, families and communities reported experiencing displacement from their local area four times over their lifetime.
- The impact of the El Niño 2023 floods significantly affected vulnerable groups, with 74% of the population confirming the presence of vulnerable individuals such as women, children, persons with disabilities, single-headed households, the elderly, and those with chronic diseases. Children and women were the most significantly affected at 27% and 23% respectively.
- The perception of respondents on mitigating the impacts of flooding in comparison to other urgent needs in the area, was mainly neutral (41%). However, there was a lean towards a high level of concern (27%). This highlights the diverse levels of priority and concern given to addressing the effects of flooding alongside other critical and more pressing needs that are affecting households and communities as compared to flood risk mitigation.

### Economic coping mechanisms

- A significant number of households at 43 per cent rely on unstable income sources such as casual labour, with 70 per cent lacking sufficient funds even for basic necessities such as food, hence reflecting deep economic vulnerability.
- Communities have adopted various coping strategies ranging from economic adjustments to structural modifications. However, these are often insufficient to fully manage the severe impacts of the floods.

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2. Aldrich, D. P., & Meyer, M. A. (2015). Social capital and community resilience. *American Behavioral Scientist*, 59(2), 254-269.

3. Ahmed, B., Shaw, R., & Mallick, F. (2022). *Community-Based Adaptation: Enhancing Resilience to Climate Change*. Springer Nature.

- Flood preparedness measures during the El Niño of 2023 led to a decrease in the purchase of food stock, non-food expenditure, the sale of non-productive animals, withdrawal of school-going children, and migration to other areas. Conversely, there was an increase in household savings, the number of meals consumed, the sale of additional household assets and properties, and a reduction in food expenditure, along with the consumption of reserved food stocks intended for the next season.
- In the aftermath of the El Niño 2023 floods, economic coping strategies exhibited a notable increase in dependence on family and external support, as well as borrowing from friends or family, and trading various items. On the other hand, there was a significant decline in the use of savings and access to alternative or diversified sources of income.
- Despite the reported changes between past flood events and El Niño 2023, the prone communities were all actively engaged in simultaneous activities to cope before and with the aftermath floods, indicating that the impacts that follow after flooding in these areas are usually too severe to be managed through only one activity.

### **Structural coping mechanisms**

- The ownership status, duration of stay and type of shelters for vulnerable populations played a crucial role in disaster preparedness. Positive changes observed in shelter reinforcement measures included raising shelter levels, using sandbags, and enhancing house structural integrity, but maintenance of drainage systems need improvement.

### **Infrastructural constraints**

- Accessibility issues, especially road damage, create major difficulties during flood events for both displaced and resident populations. Historically, these groups faced overall accessibility constraints, with 40% of displaced and 48% of resident populations affected. During the El Niño 2023 floods, there was no significant improvement, as 87% of respondents reported encountering impassable areas.
- Damaged roads were the most prevalent constraint during past flood events, representing 41% of incidents. This was followed by completely closed roads (19%), damaged bridges (14%), and river-only access (13%). In comparison, during the El Niño 2023 flood events, damaged roads continued to be the primary issue at 37%, with completely closed roads accounting for 20%.

### **Access to critical services**

- Evacuation planning is vital for disaster preparedness, yet only 43% of surveyed individuals had an evacuation plan in place. Despite their importance as safe refuge locations during disasters, only 41% of respondents had access to suitable higher grounds for evacuation, highlighting a significant gap in preparedness.
- Access to emergency shelters was limited, with only 17% of respondents having access. Host communities had double the access compared to displaced communities, with tents being the most common facility at 35%.
- Critical services such as healthcare, education, and basic utilities like electricity and sanitation were severely compromised during flood events, underscoring the infrastructural weaknesses that hinder effective disaster response and recovery.

### **Social coping mechanisms**

- There was a notable high level of disregard for early warning systems, with a slight influence from cultural and religious beliefs. A total of 66% of the surveyed population admitted to disregarding provided early warning advice. Only 34% diligently adhered to the instructions, with a notable majority being from IDP sites at 40% compared to 30% from host communities. A significant proportion of those who disregarded instructions belonged to host communities

### **Institutional coping mechanisms**

- Less than 10% of respondents were aware of any existing contingency plan, with the majority (54%) expressing a lack of awareness and 38% indicating uncertainty. Among those who recognized the existence of a contingency plan, 87% cited community-driven initiatives, 8% mentioned efforts by the district government, and 5% attributed it to the federal government. These contingency plans were typically updated every three months to align with seasonal changes. Additionally, only 9% of respondents were aware of the disaster management and coordination platform, while 39% were completely unaware, and 52% were uncertain about the contingency plan.

## Conclusions

Somalia's substantial vulnerability to economic shocks, primarily driven by a high poverty rate, exacerbates the severity of impacts from natural disasters like flooding. Its geographical setting, with significant dependence on the Juba and Shabelle rivers for agriculture and irrigation, further complicates the situation when extended periods of enhanced rainfall such as with the El Niño 2023 that cause devastating floods along the riverine communities. Cyclic weather patterns further expose communities to repeated disruptions, which not only deplete emergency reserves but also hinder long-term recovery and rebuilding processes. As a result, the resilience of the population is continuously compromised, leaving them more vulnerable with each successive event. By examining the historical experiences of past flood disasters and the recent El Niño 2023 event in assessing coping mechanisms adopted, there will be improved understanding on the extent of community involvement in preventing, reducing exposure, and managing the impacts of flood disasters, as well as their recovery processes and in the identification of existing gaps that need prompt attention and action.

## Recommendations for Enhancing Community Coping Mechanisms in Somalia.

1. **Enhancing Economic Support Mechanisms:** Developing sustainable livelihood programs and support systems that can provide stable income and aid during emergencies to reduce economic vulnerabilities. In addition to developing interventions for vulnerable groups, including women, children, disabled individuals, and single-parent households, to ensure their specific needs are addressed during disaster events.
2. **Strengthen Early Warning Systems:** Enhance the reliability and usability of early warning information to improve response and ensure that communities take necessary actions to mitigate disaster impacts.
3. **Enhance Early Warning information Uptake:** There is a need to enhance and conduct capacity building among communities, religious, and cultural leaders regarding the importance and use of early warning systems. This is essential in addressing the disregard of such messages, as timely early warning information is often not acted upon appropriately. Additionally, it will help bridge the gap between early warning and early action.
4. **Strengthening Institutional Support:** There is a pressing need for structured and frequent updates to contingency plans, with broader community involvement and awareness initiatives to enhance preparedness levels.
5. **Improving Infrastructure and Accessibility:** Prioritizing the enhancement of physical infrastructures such as roads, bridges, and basic service facilities to ensure they are resilient and functional during disasters.
6. **Community Awareness and Engagement:** Implementing comprehensive awareness and training programs that address the cultural and behavioral challenges in accepting and acting on early warnings.
7. **Long-Term Recovery Support:** Establish mechanisms for long-term recovery and rebuilding processes, addressing the depletion of emergency reserves and effectively mitigating the cyclical impact of disasters on vulnerable communities.

## OVERVIEW



Natural disasters in Somalia create serious disruption and economic loss that undermine the survival of vulnerable communities. A large portion of the population is already vulnerable to economic shocks, given that 69% of its population live below the international poverty line<sup>1</sup>. Somalia has a longstanding history of flooding. The rivers Juba and Shabelle not only are essential in supporting agricultural activities but also supply essential irrigation water for farming and sustained food security<sup>2</sup>. However, these two rivers play a significant role in the flooding experienced during periods of enhanced rainfall coupled with poor drainage systems. Numerous floods have occurred in the past decades such as in 2010 and 2011<sup>3</sup>. These deluges not only disrupt normal life but also pose severe hazards to agriculture, housing, infrastructure and economy.

Cyclic weather patterns expose communities to repeated disruptions, which not only deplete emergency reserves but also hinder long-term recovery and rebuilding processes. As a result, the resilience of the population is continuously compromised, leaving them more vulnerable with each successive event. The impact of disasters such as floods are further exacerbated by the ongoing conflict and political instability in the country, which hinders efforts to address the underlying causes of flooding and improvement in disaster preparedness and response<sup>4</sup>. Despite these challenges, there are ongoing efforts to develop strategies to mitigate the impact of flooding in the country, including the development of early warning systems and the construction of flood protection infrastructure<sup>5</sup>.

The 2023 El Niño underscored the vulnerability of Somalia to climatic variations and highlighted the need for enhanced resilience and adaptive strategies in anticipation of future climatic events. As shocks become more frequent and more severe, even the slightest shock pose a considerable threat to the individuals residing in communities. Flood induced displacement was reported between October to December displacing 231,234 individuals<sup>6</sup>. This relentless disaster cycle demands an adaptation of coping strategies, to manage and mitigate the impact of these repetitive natural disasters<sup>7</sup>.

Coping strategies for disaster related events define the capacities, resources and skills that individuals, groups, and institutions have in their possession and are useful in effectively handling disaster risks, or emergencies<sup>8</sup>. In essence, the degree of vulnerability to any risk determines the coping ability and can influence the magnitude and impact of a disaster, as well as the capability to implement measures to counter its effects. Thorough analysis of past disasters experiences and in the availment of resources, coping mechanisms can gauge how communities were involved in the prevention, minimization of exposure, impacted by disaster and their recovery process. Hence, building an informed understanding of how individuals and communities cope with disasters and identifying prevailing gaps that require immediate attention and action<sup>8</sup>, can contribute to future disaster preparedness and response efforts.

1. Tokikuta & Masaki (2022). Mapping climate change and drought in Somalia. Retrieved from World Bank Blogs: <https://blogs.worldbank.org/en/african/mapping-climate-change-and-drought-somalia>.

2. FAO. (2016, June 3). The Juba and Shabelle rivers and their importance to Somalia. Retrieved from Relief web: <https://reliefweb.int/report/somalia/juba-and-shabelle-rivers-and-their-importance-somalia>.

3. Ali, A. (2012). Flood-prone areas in Somalia: Challenges and opportunities. *Journal of Environmental Science and Health, Part B*, 47(1), 33-44.

4. Kidan, G. (2018). Floods in Somalia: Causes, impacts and responses. *Journal of Disaster Risk Reduction*, 11(2), 131-143.

5. El-Masri, K. (2019). Flood management in Somalia: Challenges and solutions. *International Journal of Science and Technology*, 11(2), 168-184.

6. IOM. (2024). DTM Somalia Emergency Trend Tracking Report (Dec 24, 2023 — Jan 06, 2024)

7. CARE. (2023, November 29). El Niño-Induced Floods Devastate the Horn of Africa. Retrieved from ReliefWeb: <https://reliefweb.int/report/somalia/el-nino-induced-floods-devastate-horn-africa>.

8. UNDRR. (2024). Capacity. Retrieved from United Nations Office for Disaster Risk Reduction : <https://www.undrr.org/terminology/capacity>



## OBJECTIVES

The primary goal of this initiative was to assess the coping strategies employed by individuals and communities affected by floods along River Juba and Shabelle, and to identify interventions used for enhancing flood disaster preparedness, response, and recovery. Specifically it aimed to assess the coping strategies employed by flood-affected communities in the past flood events and during the El Niño 2023 flood events. This can also contribute to the knowledge on disaster mitigation measures to curb the impacts of recurrent flood cycles as part of Disaster Preparedness and Disaster Risk Reduction (DRR) in Somalia.

## METHODOLOGY

### Assessment themes

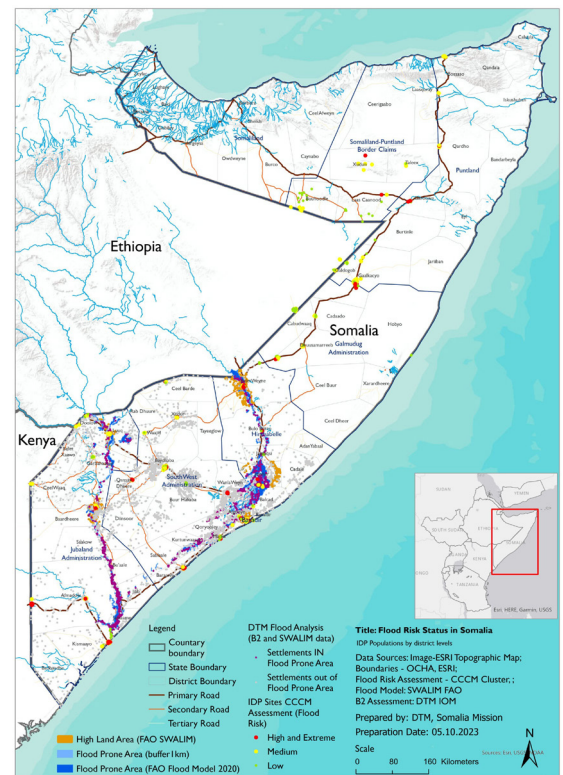
This assessment employed a quantitative methodology designed by DTM Somalia. It aligned with Somalia's context and experience with disasters within the broader disaster risk management strategies. The major themes used for analysis of community coping mechanisms were at economic, physical accessibility constraints, infrastructural, structural, social, and at institutional levels. Economic coping mechanisms linked to materials goods and resources in which communities or households can engage in with the capability to produce profits or benefits before and after floods in order to survive (income, livelihood diversification and household purchasing power). Structural coping mechanisms included activities in which communities can engage in to protect or cope with flood losses or damages related to their livable spaces. Infrastructural coping mechanisms linked to obstructed access due to flood damages on roads, health care centers, water and sanitation services, electricity, markets, evacuation routes, safe higher grounds and emergency rescue centers. Social coping mechanisms related to how the communities or individuals behave when faced with disasters in order to survive. Lastly, institutional coping mechanisms related to existence of contingency plans and disaster management and coordination platforms as part of the broader disaster preparedness and response strategies.

### Sampling and coverage

In order to assess the coping mechanisms communities have engaged in over time, flood prone area dataset from FAO SWALIM was used to delineate areas that have been historically affected by floods along River Juba and Shabelle. An assumed additional 1km buffer zone was included to better understand the exposure of vulnerable communities at risk of flooding. This approach aligned with the flood risk exposure analysis conducted by DTM along riverine districts during the same period as shown in map 1.

Out of the several districts that span along the Juba and Shabelle rivers, six districts were selected for this assessment: Balcad, Bulo Burto, Beledweyne, Doolow, Jowar and Doolow. Their selection was guided not only by their history of recurrent flooding and flood risk exposure analysis but also by reported flood-induced population displacements, as reflected in the previous periodic DTM Emergency Trend Tracking analysis. These spatial datasets were then overlaid with settlement site data from Baseline 2 data to inform on the settlement sites, population figures and demographics at risk.

Implemented by DTM Somalia mission, Baseline 2 is an area-based assessment which aims to quantify presence of population categories and gathers estimates of households and individuals disaggregated by each population category<sup>9</sup>. The baseline population data in this case was used to prioritize and select target sites for the assessment with high population figures. Furthermore, ease of accessibility to the settlement sites due to security was used to refine the final target settlements sites.



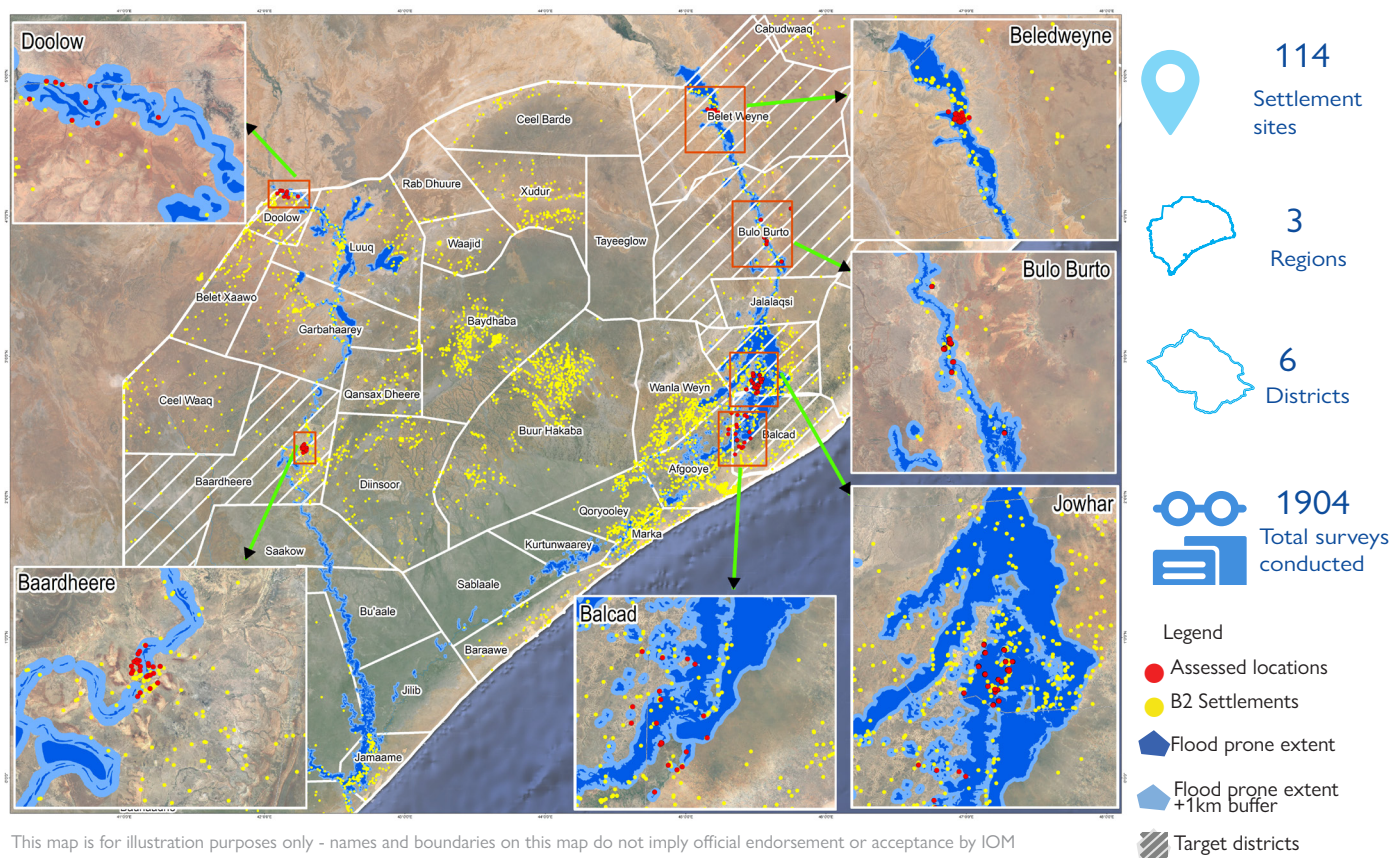
9. IOM. (2024). DTM Somalia Baseline 2 Summary Report. International Organisation for Migration

This map is for illustration purposes only - names and boundaries on this map do not imply official endorsement or acceptance by IOM



Prior to conducting the assessment, enumerators were trained on the data quality requirements, broader assessment themes, field coordination and planning. Of the total 18 enumerators trained, 73% were male and 27% were female. The assessment proceeded with both key informant interviews and household surveys at the settlement level. Two coded survey forms were deployed via Kobo.

Though the questions were largely the same for both key informants and households, the sections on economic coping strategies and disaster perceptions included specific questions tailored for households. These questions focused on identifying household income sources, the proportion of household members earning an income, assessments of the household’s purchasing power, and the level of awareness and coverage of existing early warning systems. To streamline analysis and reporting, data from key informant interviews and household surveys were integrated into a single framework, with a particular emphasis on linking economic coping mechanisms and the coverage of existing early warning systems to household data.



During field operations, enumerators utilized navigational maps to access target settlement sites effectively. Additionally, the survey tool included a feature that allowed switching the language settings from English to Somali. The assessment covered a total of 114 settlements, surveying 1,904 respondents as summarised in Table 1 representing a combined population of 31,622 internally displaced persons (IDPs) and 31,112 members of host communities. Among the total 1,904 respondents, 73% were male and 27% were female.

The assessment included 951 key informant interviews, with the majority of respondents being community clan representatives (41%), followed by women group leaders (15%), and local government representatives (13%). The remaining key informant categories were religious leaders (8%), displaced group representatives (6%), gate keepers (6%), camp managers (5%), youth leaders (3%) and others (3%). For the household survey, 953 individuals were interviewed, with 91% of the respondents being household heads. Of these, 50% were female-led households, and 41% were male-led.



1,904

Respondents were interviewed



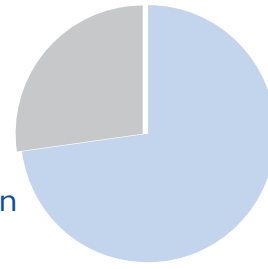
62,734

Total household population from the sampled population



27%

Women



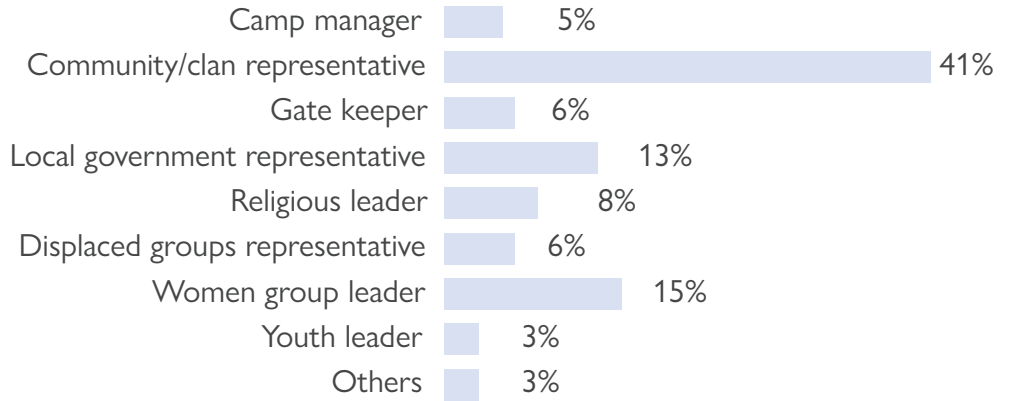
73%

Men



951

Key informant interviews



953

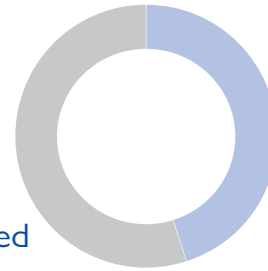
Household Surveys

91% of the respondents were household heads



50%

Women-Led



41%

Male-Led

Table 1: Number of surveys conducted in assessing community coping mechanisms in flood affected districts in Somalia

District	Household Survey			Key Informant		
	Host Community	IDP Site	Host community + IDP	Host Community	IDP Site	Host community + IDP
Balcad	196	10	206	189	10	199
Bulo Burto	45	20	65	44	21	65
Doolow	105	45	150	105	45	150
Jowhar	101	53	154	106	51	157
Beledweyne	9	189	198	7	191	198
Baardheere	69	111	180	64	118	182
Grand Total	525	428	953	515	436	951

# ASSESSMENT FINDINGS

## Observed climate change trends (10 year period)



1st Trend

Increased rainfall



2nd Trend

Increased drought



3rd Trend

Increased temperatures

47% of the respondents are aware of an existing functioning early warning system

81% of the respondents abandoned their livelihoods due to floods during El Niño 2023

57% of the respondents did not incorporate past flood events to their preparedness in El Niño 2023.



4 The average number of times families have been displaced in their lifetime due to floods

## Riverine flood cycle

17% of the respondents reported that floods occur every rainy season within their locality

77% of the respondents reported that riverine flooding occurs every year within their locality.

## PERCEPTION OF DISASTERS

Climate variability often has multiplier effect on prevailing food security, conflicts and resource allocation which exacerbate tensions and cause displacements. Understanding climatic patterns and disaster risks in Somalia greatly contributes to reliable knowledge of potential disaster risks and vulnerabilities which ultimately can inform on a communities' coping abilities to reduce impacts of disaster.

Protracted cyclic climatic patterns over the past 10 years were assessed in the 6 districts. Reportedly, the top three (3) climatic trends that have been experienced were; increase in rainfall (33%) associated with flooding, drought occasioned by less rain (28%) and increased temperatures (19%) as shown in Figure 1.

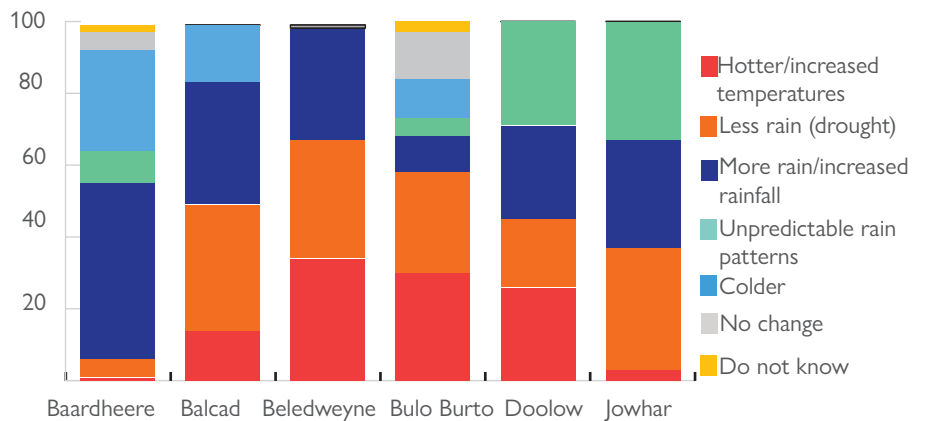


Figure 1: Climatic trends experienced in the past 10 years in the assessed areas

## State of awareness of an early warning system

Disseminating early warning information about impending disasters is crucial for disaster preparedness, as it enables communities to take proactive measures to mitigate the impacts. However, the household assessment revealed that only 47% of the population, or an estimated 78,172 individuals, were aware of the existence of an early warning system. 81% of respondents confirmed having to abandon their livelihoods due to flooding, despite experiencing previous flood disasters. On average, families and communities reported being displaced four times within their local area over their lifetime and more than half of the total respondents (57%) stated that they did not incorporate past experiences in informing their preparedness and response strategies for the 2023 El Niño event.

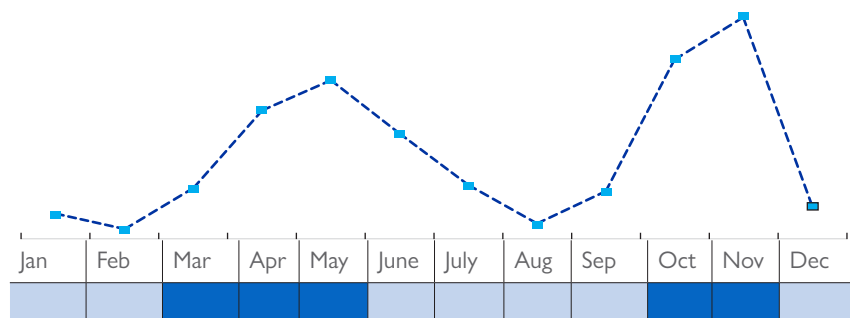


Figure 2: Seasonal calendar in Somalia

The peak flooding periods brought about by intensified rainfall were consistent with the typical 2 rainy seasons in Somalia; Gu (main rainy season that starts mid-March to mid May) and Deyr (secondary rain season, that commences from mid-September to Mid-December as highlighted in Figure 2.



## Estimated flood water levels

**3%**  
of the respondents reported ankle length

**34%**  
of the respondents were fully submerged

**26%**  
of the respondents reported knee length

**22%**  
of the respondents reported shoulder length

**14%**  
of the respondents reported waist level

**74%** of the respondents were from vulnerable groups who were affected by the El Niño 2023 floods

**40%** of the respondents consider reducing effects of flooding as HIGH and VERY HIGH

Table 3: Prioritizing the Reduction of Flood Water Impacts

District	Very High	High	Neutral	Low	Very Low
Baardhere	0%	1%	73%	21%	5%
Balcad	47%	18%	30%	0%	5%
Beledweyne	9%	52%	16%	10%	12%
Bulo Burto	4%	14%	34%	28%	20%
Doolow	1%	20%	45%	34%	0%
Jowhar	2%	47%	50%	1%	0%
Total	27%	14%	41%	13%	6%

## Estimation El Niño 2023 flood magnitude

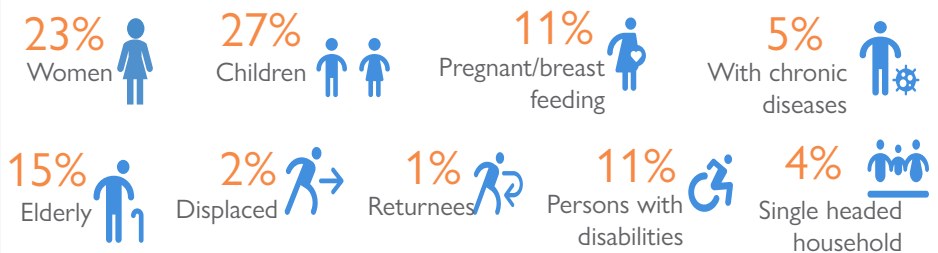
The amount of flood water directly correlates with the severity of damage. Hence, in its estimation, a better understanding of the magnitude of the disaster, appropriate response and recovery plans measures can be met. In the assessed area, during the El Niño 2023, of the fully submerged levels, a majority hailed from Beledweyne (58%) and Balcad (53%). Respondents who reported at knee length were mostly from Doolow at 88% followed by Baardheere at 48%. 22% who reported shoulder level were from Balcad (45%) and Jowhar (48%). Jowhar had the most reported incidences of waist level flood water at 40% followed by Bulo Burto at 29%. Summary of flood level estimates across the 6 districts is as shown in Table 2.

Table 2: Estimated flood levels across the six districts during El Niño 2023

District	Estimated flood water depth				
	Ankle	Fully submerged	Knee	Shoulder	Waist
Balcad	0%	53%	0%	45%	2%
Bulo Burto	16%	21%	28%	5%	29%
Doolow	2%	0%	88%	0%	11%
Jowhar	0%	1%	11%	48%	40%
Beledweyne	6%	58%	8%	18%	10%
Baardheere	1%	48%	37%	37%	10%

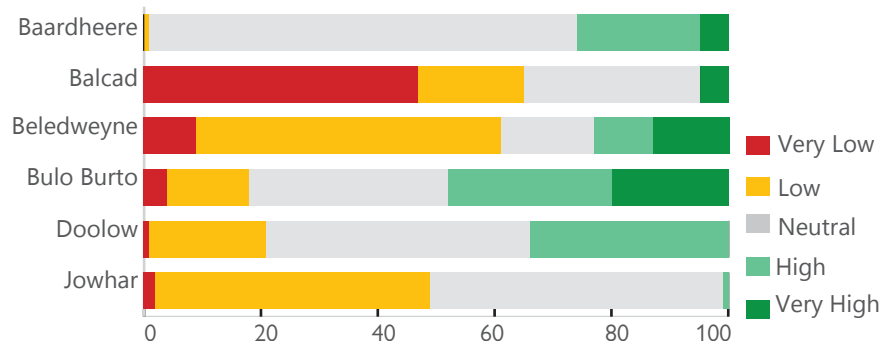
## Impact of floods to the vulnerable populations

Seventy four per cent (74%) of the population reported that vulnerable groups such as women, children, persons with disability, single headed household, elderly, people with chronic disease, breast feeding or pregnant, returnees and displaced population were affected by the El Niño 2023 floods. Children and women comprised of 27 and 23 per cent respectively.



## Flood disaster prioritization

The overall perception of the respondents in regards to reducing the impact of effects of flooding within the area compared to other pressing needs facing them was mostly at neutral (41%) tipping towards high (27%) scale as highlighted in Table 3 and Figure 3.



## Sources of income

\* From household survey that targeted 952 respondents



**43%** of the respondents depend on casual or daily labour as a primary source of income

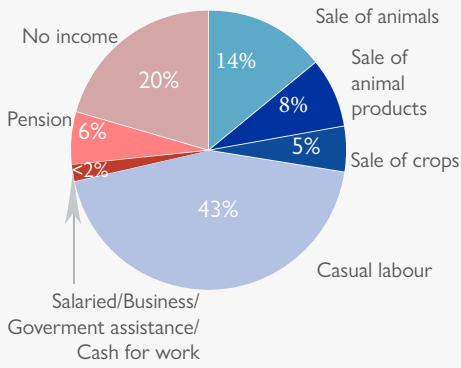


Fig 4: Sources of income

## Household purchasing power

\* From household survey that targeted 952 respondents



**70%** of the respondents do not have enough money even for food

**74%** of the respondents reported that more than half to all family members struggled to meet basic food needs

## Humanitarian and Livelihood Support

\* From household survey that targeted 952 respondents



**22%** of the respondents have received a form of humanitarian support prior to El Niño 2023



**64%** of the respondents did not receive any form of livelihood assistance prior to onset of El Niño in 2023

## ECONOMIC COPING MECHANISMS

Many factors, including income levels, access to multiple sources of income, and spending capacity, shape the tactics that individuals and communities use to manage disasters. As families face significant losses following disasters, the need to restore lost items increases, resulting in increased recovery costs influenced by the availability of resources, access to capital, and purchasing power. Therefore, understanding the preventative measures households implement before floods and the actions they take afterward can provide insights into the economic coping mechanisms established.

In the six surveyed districts, the predominant source of income for households was casual or daily labour, accounting for forty-three percent (43%). Twenty percent (20%) of the respondents reported having no source of income, with 94% of these individuals were IDPs or displaced. Animal sales contributed to 14 per cent of the income sources. Regarding purchasing power, 70 per cent of households lacked sufficient funds even for food, affecting nearly equal portions of the resident and displaced populations, each comprising fifty per cent as shown in Figure 5. Additionally, seventy-four per cent of the respondents indicated that over half to most, or all, families found it challenging to meet basic food requirements.

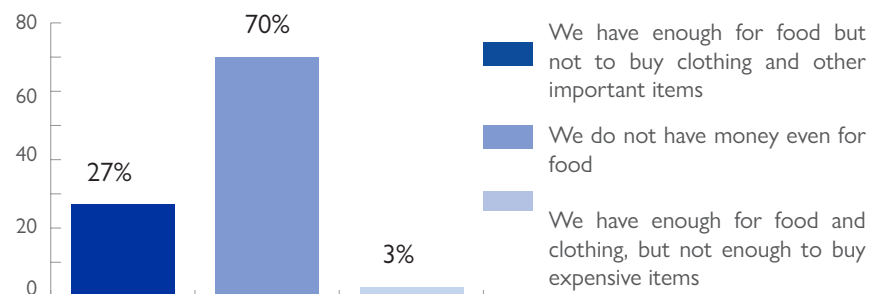


Figure 5: Household purchasing power

Humanitarian and livelihood support can contribute in bolstering the resilience of communities to withstand and recover from catastrophic events in mitigating immediate and long term impacts. by lessening the long-term socio-economic consequences of disasters. In the assessed area, only twenty-two per cent of households had received humanitarian before the El Niño 2023 floods. Across the six districts, a substantial 64% of respondents indicated that they had not received livelihood support which translates to higher levels of vulnerability of population groups exposed to the El Niño 2023 floods.

Table 4: Proportion of humanitarian and livelihood support received prior to El Niño 2023

% of Respondents that received livelihood support prior to El Niño 2023		
Districts	Did not receive support	Received support
Balcad	6%	49%
Bulo Burto	8%	5%
Doolow	15%	17%
Jowhar	24%	3%
Belet weyne	32%	-
Baardehere	15%	26%

## Flood Preparedness Measures

Given the cost of recovery from the impact and losses caused by disasters, and the livelihood disruption they bring, it is imperative that the coping strategies relate to economic and financial resources within a household. Actions taken by communities or households before onset of past flood events and the El Niño 2023 were comparatively analyzed to expose if there was any form of learning acquired as part of disaster preparedness.

From the analysis, across the six districts it was noted that during the El Niño 2023 preparedness, there was a slight decrease or reduction in purchase of food stock, sale of non-productive animals, non-food expenditure, withdrawal of school going children from school, and lastly there was decreased migration to other areas at both household and community level. Conversely, there was a slight increase in the money the households' saved, the number of meals taken, sale of more households' assets and properties, increased reduction of food expenditure, consumption of food stock that was saved intended to be used for the next season. Reportedly, there was no significant change in access to alternative or diversified sources of income as summarised in Figure 6.

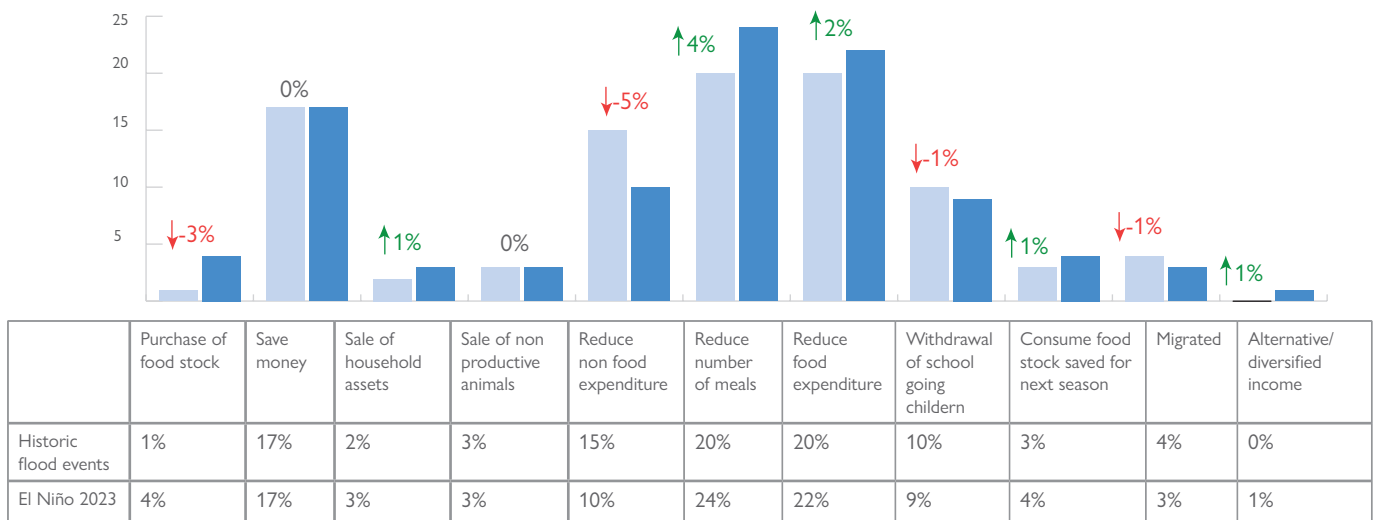


Figure 6: Actions taken before El Niño 2023, compared to historical flood

## Flood Response Measures

Economic coping strategies employed during the aftermath of the El Niño 2023 floods and past flood events were similarly evaluated across all the six districts. It was noted that during the El Niño 2023 response, there was a significant increase in the reliance of support from family and external support; borrowing from friends or family, purchase of food stock, saleable items, improved access to emergency supplies and money saved. However, a significant decrease was noted in spending their savings and access to alternative or diversified sources of income. Despite the reported changes between past flood events and El Niño 2023, the communities were all actively engaged in differing activities or measures to cope with the aftermath floods, indicating that the impacts that follow after flooding in these areas are usually too severe to be managed through only one activity as highlighted in Figure 7.

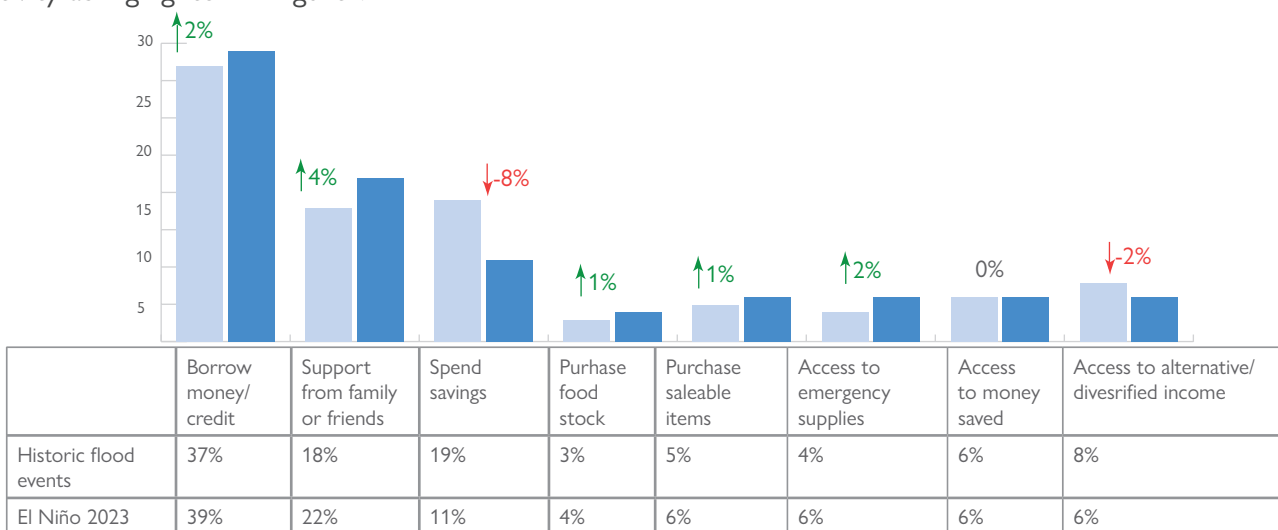


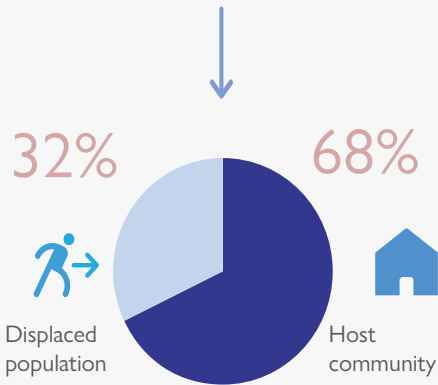
Figure 7: Actions taken after El Niño 2023, compared to historical flood



## Emergency Response during El Niño 2023



34% of the respondents received emergency or relief assistance during the El Niño 2023 flood events



### Top 3 Emergency Assistance Received



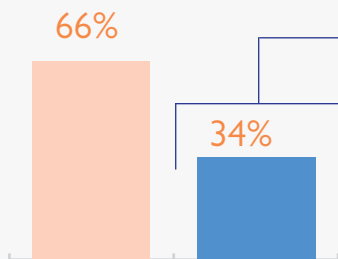
Temporary shelter



Non Food Items (NFI's)



Health and medical services



Emergency or relief assistance is fast-paced, reactive, short-term, and focused on meeting immediate basic needs and preventing morbidity and mortality. To understand past assistance trends, respondents were asked to highlight the type of emergency assistance received as part of disaster response, during the El Niño 2023 floods. Only 34% of the respondents stated that they received with the majority being from host communities (42%). Of the six districts, Beledweyne district had almost all its population not receiving any emergency assistance. Doolow district had the highest proportion of displaced population receiving aid at seventy two per cent while Balcad district at sixty eight per cent for the host communities.

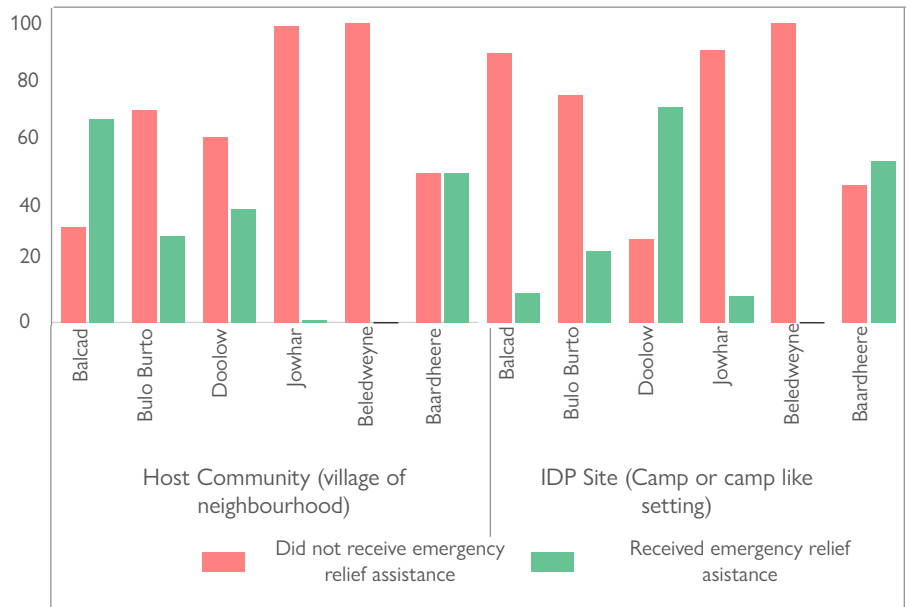


Figure 8: Proportion of population that received emergency or relief assistance

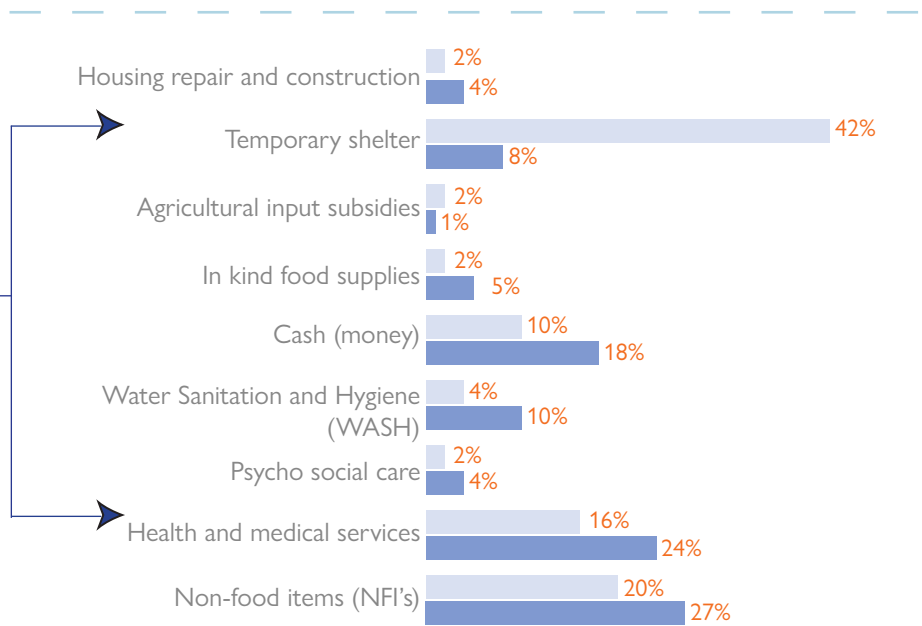


Figure 9: Forms of emergency or relief assistance received during El Niño

In the districts that received emergency supplies during the flood response, the most common forms of support provided included temporary shelter, with Balcad district receiving the highest amount. Non-food items were also widely distributed, with Doolow district receiving the most. Baardhere district reported highest cash assistance and availability of health and medical services.

## Ownership and length of stay



**48%** of the respondents are home owners

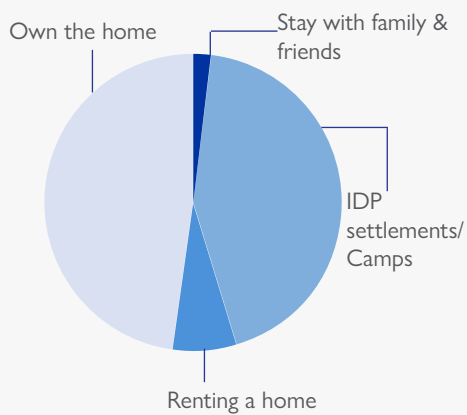


Figure 10: Home ownership status

**35%** of the respondents have lived at their current location for 1-4 years

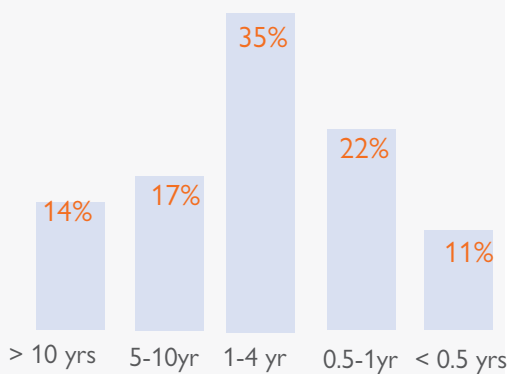


Figure 11: Duration of stay in current place of residence

## STRUCTURAL COPING MECHANISMS

Shelter is a key component of families' ability to cope after a disaster. Ownership status of place of residence has a direct correlation with the decision or latitude of options an inhabitant will be willing to take to secure their homes in the event of a disaster, more so a recurrent one. From the assessment, most of the respondents were home owners at 48%. IDP settlements or camps constituted 44% while only 7% rented their homes. The duration or length of stay in an area can influence the level of awareness in coping with any disaster from previous past experiences. This goes a long way in disaster preparedness. The most common duration of stay of respondents at their current location was 1-4 years (35%), followed by half a year to a year (22%), then 5-10 years (17%).

### Common shelter types

The relationship between shelter type and disaster preparedness is crucial. Flooding can inflict significant direct and indirect losses on vulnerable communities, through the physical destruction of housing and the loss of crops and productive assets. The presence of varied shelter options enhances the resilience of communities, as they can cater to diverse needs and circumstances. By incorporating different shelter types into disaster preparedness plans, authorities can better mitigate the impact of disasters and ensure the well-being of those affected. Of the 80 per cent sampled population, 36 per cent reported buul/bush, while 28 per cent reported Somali traditional houses with woven mats/twigs/caqal Hori and tents were reported by 16 per cent.

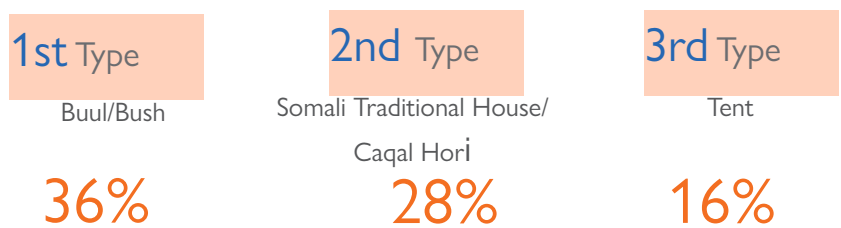
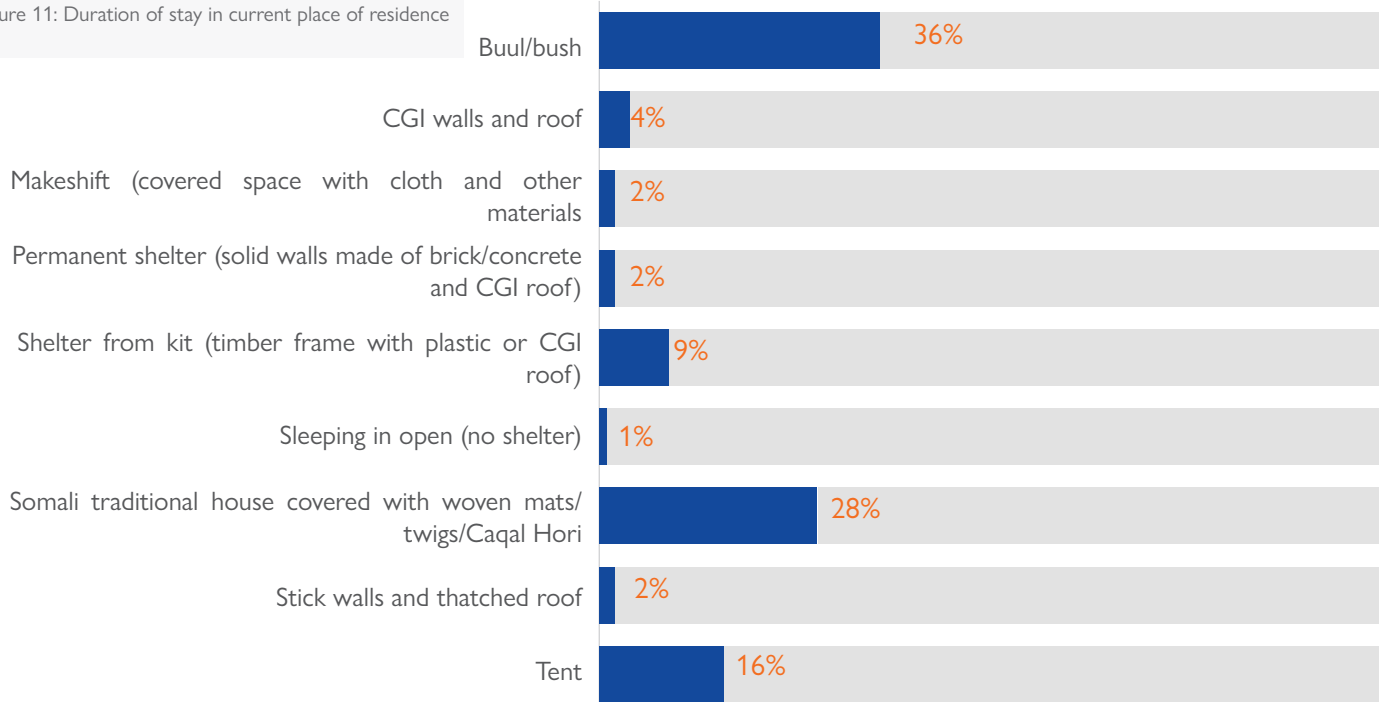


Figure 11: Available shelter types in the assessed flood prone districts



## Impact of floods on shelter types



**63%** of the respondents had their shelters destroyed during the El Niño 2023 flood events

The structural integrity of shelters can be compromised due to the force of floodwaters, leading to collapses and rendering them uninhabitable. Rebuilding or repairing shelters post-flood can be a costly and time-consuming process, further exacerbating the challenges faced by affected communities. The assessment revealed consistent outcomes regarding the impact of floods on shelters, with 61% and 28% of respondents reporting total and partial damages in past flood events, and 63% and 28% reporting total and partial damages during the El Niño event in 2023. These findings underscore the vulnerability of existing shelter types to flooding, leaving the population at greater risk as they lack the capacity to withstand the impact of flood waters.

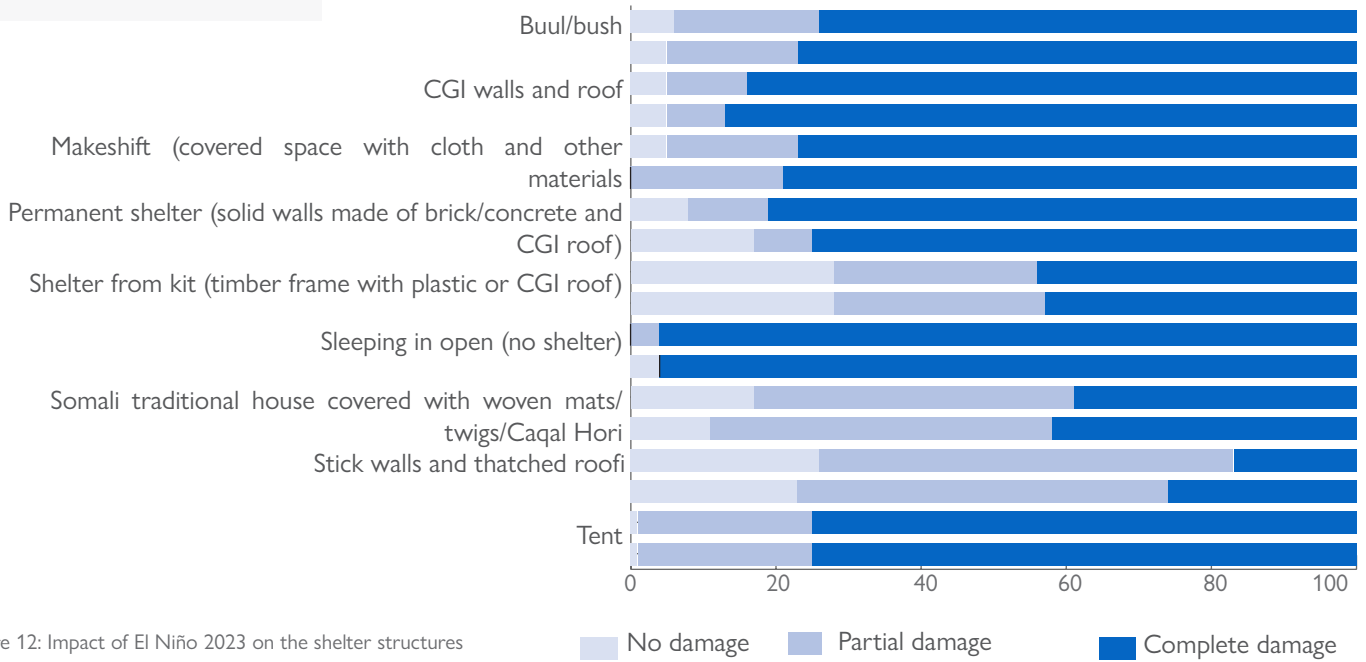


Figure 12: Impact of El Niño 2023 on the shelter structures

## Shelter reinforcement measures

As part of disaster risk preparedness, the analysis compared the measures taken by communities or households to protect their homes during previous flood incidents and the El Niño floods in 2023 to determine if any learning had occurred for adaptation and disaster preparedness. Positive changes were observed, including increased tree planting, the use of sandbags around homes, raising shelter levels, and enhancing the structural integrity of houses. However, there was a decline in activities such as digging or rehabilitating trenches around homes and constructing drainage systems as shown in Figure 13.

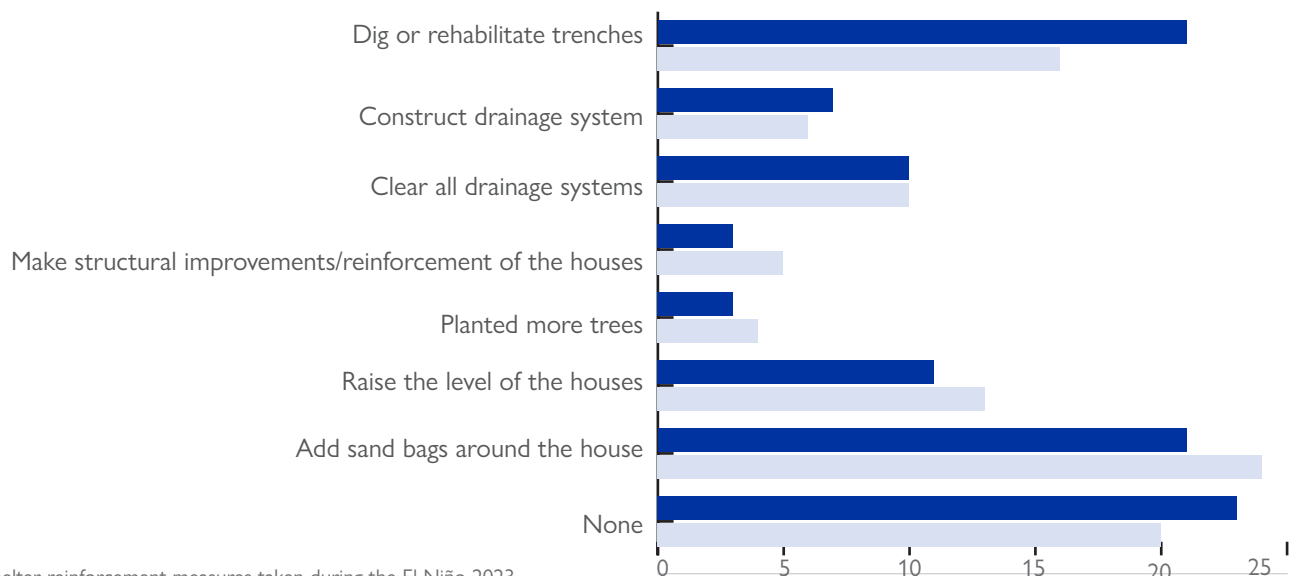


Figure 13: Shelter reinforcement measures taken during the El Niño 2023





**88%** of the respondents reported their area being impassible during past flood events

**87%** of the respondents reported their area being impassible due to El Niño 2023 floods.

**Top physical access constraints in El Niño 2023**

**37%**  
Damaged roads

**20%**  
Completely closed roads

**15%**  
No road access (only river)

**15%**  
Damaged bridge

**INFRASTRUCTURAL COPING MECHANISMS**

In past flood events, both displaced and resident populations faced overall accessibility constraints, with 40% and 48% respectively reporting such issues at the settlement level. Bulu Burto district had the least reported incidents at 5%. During the El Niño 2023 floods, there was no significant change, as 87% of respondents reported impassable areas, with Bulu Burto still having the fewest incidents. When disaggregated by settlement level, the accessibility constraints remained similar for displaced (40%) and resident (46%) populations.

The most common constraint in historical flood events was damaged roads, accounting for 41% of incidents. This was followed by completely closed roads (19%), damaged bridges (14%), and only river access (13%). Comparatively, in the El Niño 2023 floods, damaged roads remained the top constraint at 37%, followed by completely closed roads at 20%. Doolow district still reported access through the river as the only means of transportation for affected communities. District level comparative analysis was also done for past and El Niño flood events and is as summarised in Table 5.

Fig 14: Type of physical access constraints (past flood events)

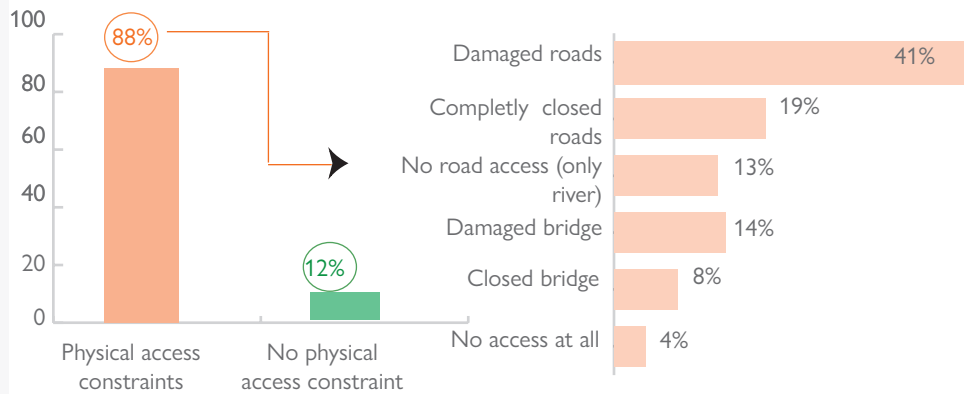


Fig 15: Type of physical access constraints (El Niño 2023)

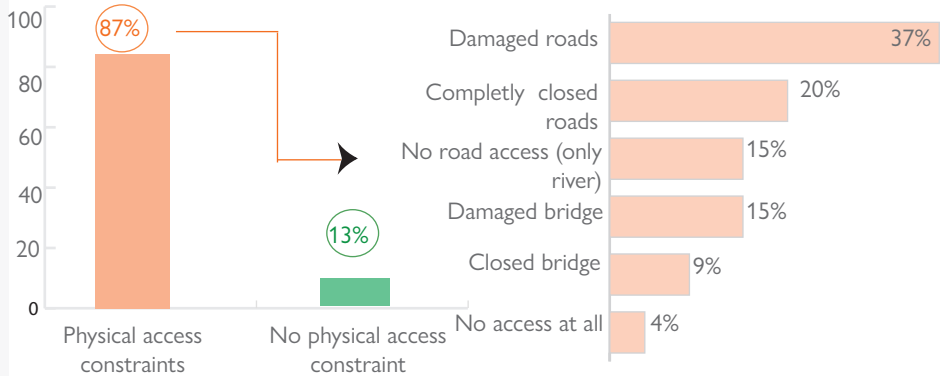


Table 5: Physical access constraints across the districts during past and El Niño 2023)

Districts	Baardheere		Balcad		Beledweyne		Bulu Burto		Doolow		Jowhar	
	Past	El Niño	Past	El Niño	Past	El Niño	Past	El Niño	Past	El Niño	Past	El Niño
Damaged roads	39%	35%	55%	49%	72%	58%	20%	22%	29%	23%	30%	31%
Damaged bridges	28%	15%	21%	11%	2%	10%	-	16%	-	37%	17%	29%
Completely closed roads	13%	10%	11%	1%	10%	12%	16%	10%	31%	40%	28%	17%
Closed bridge	11%	12%	12%	14%	5%	7%	26%	26%	-	-	5%	4%
No road access	6%	25%	2%	24%	7%	5%	10%	1%	39%	-	17%	17%
No access at all	2%	3%	-	1%	4%	8%	28%	25%	-	-	3%	2%

## Evacuation Routes



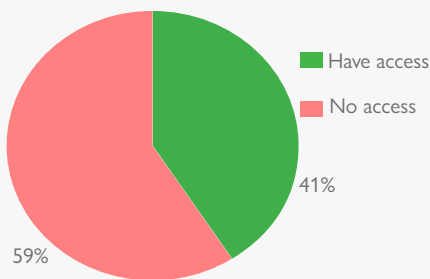
**43%** of the respondents have identified evacuation routes or plan in event of natural disaster

**57%** of the respondents do not have identified evacuation routes or plan in event of natural disaster

Table 6: Available evacuation routes and sites

Access to evacuation routes or sites per district		
District	Yes	No
Balcad	84%	16%
Bulo Burto	31%	69%
Doolow	56%	44%
Jowhar	3%	97%
Beledweyne	1%	99%
Baardheere	74%	26%

## Safe higher grounds



**17%** of the respondents had access to emergency temporary shelters during the El Niño 2023.

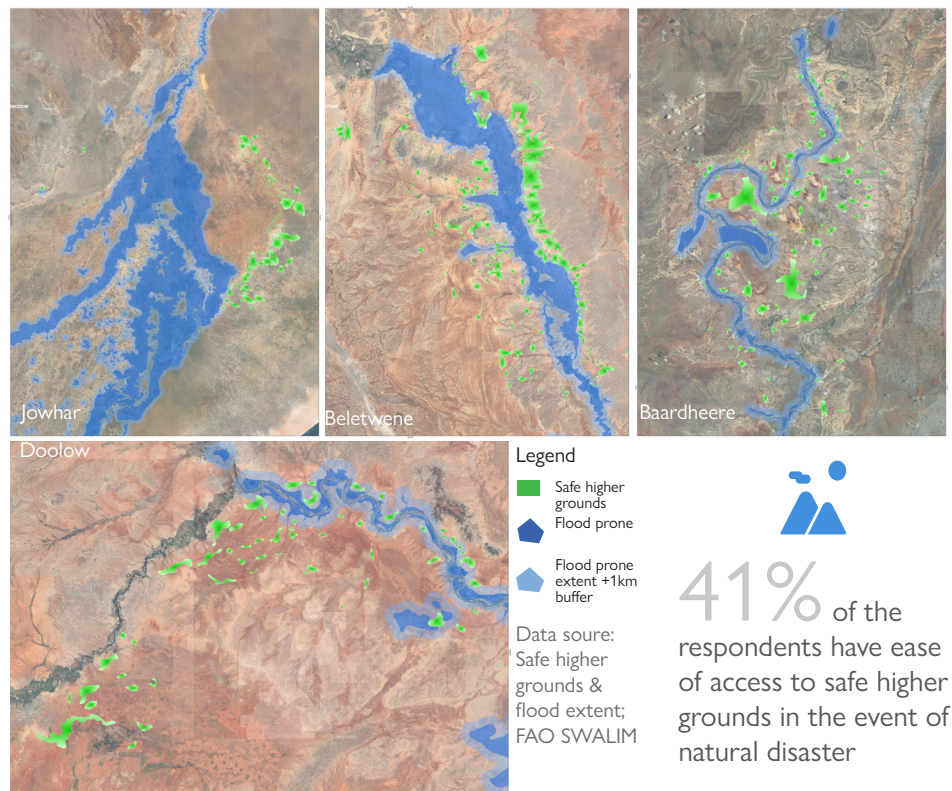
## PHYSICAL ACCESS CONSTRAINT

### Evacuation Planning

Evacuation planning is crucial in disaster preparedness as it ensures the safe and organized relocation of individuals from high-risk areas to designated shelters or safer locations. This proactive approach addresses potential challenges and optimizes resources to mitigate the impact of disasters, protect lives, and bolster community resilience. The assessment indicated that over half of the surveyed population (57%) did not have an evacuation plan, with only 43% having one in place. Of the districts surveyed, Beledweyne had the lowest percentage of respondents (1%) with an evacuation plan, while Baardhere (74%) demonstrated the most positive responses regarding evacuation planning. Summary at district level is as shown in Table 6.

### Safe higher grounds

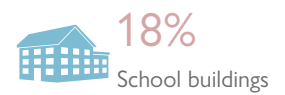
Safe higher grounds serve as essential refuge locations during disasters such as floods, tsunamis, and storm surges. These elevated areas provide a secure retreat for communities, mitigating the potential impact of rising water levels and reducing the risk of inundation and also facilitate the efficient deployment of relief and rescue efforts. Only 41% of the sampled respondents had access to potential higher grounds suitable for evacuation despite their existence.



**41%** of the respondents have ease of access to safe higher grounds in the event of natural disaster

### Emergency shelters

Reportedly, only 17% of the respondents had access to emergency shelters in the event of flooding, with host communities (12%) more likely have access than IDPs (6%). The commonly used facilities were tents at 35%, followed by both temporary structures (built with paper) and prefabricated structure (built with timber/wood) at 24%; school buildings (18%) and others at 6%.



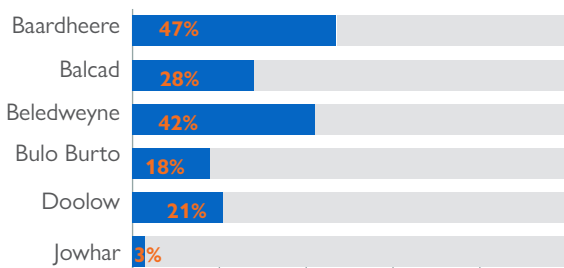
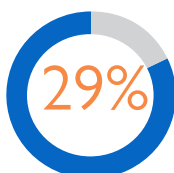
## Access to critical basic services

Access to basic services during emergency response after any form of disaster is crucial for ensuring the well-being and survival of affected populations. Essential services such as healthcare, clean water, sanitation, and shelter are fundamental for addressing immediate needs, preventing the spread of diseases, and ensuring the provision of life-saving support. Moreover, access to education and communication facilities offers stability and a sense of normalcy, particularly for vulnerable groups such as children. Ensuring dependable access to these basic services not only facilitates immediate disaster response but also forms the foundation for the enduring resilience and recovery of affected communities, setting the stage for sustainable reconstruction and progress. An assessment of the accessibility to these indispensable services was conducted to evaluate their role in enhancing community coping mechanisms among flood-affected populations.



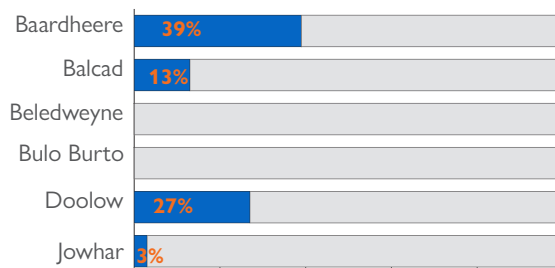
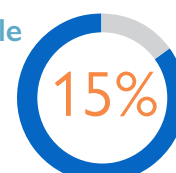
### Access to Healthcare Services

Twenty nine per cent have access to healthcare services while 71% of the respondents do not have access.



### Access to Fresh Drinkable Water

Fifteen per cent have access to drinkable water while 85% of the respondents do not have access.

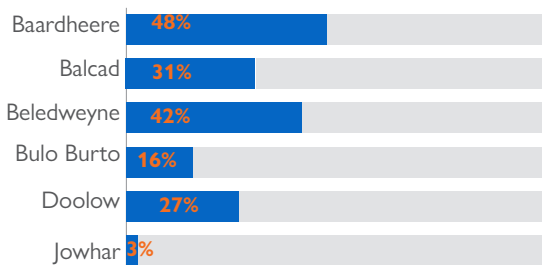
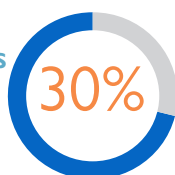


In terms of health care services, 82 per cent of host communities and 59 per cent of IDPs did not have access. Jowhar district had almost all the respondents with the least accessibility level (97%) and Baardheere district has the most with ease in accessibility levels (47%). Bulo Burto district and Beletweyne district reported no access to fresh drinking water. The highest level of access to fresh drinking water was reported in Baardhere (39%) and Doolow (27%). It is important to note that in all six district, not even half of the population reported access to fresh drinking water.



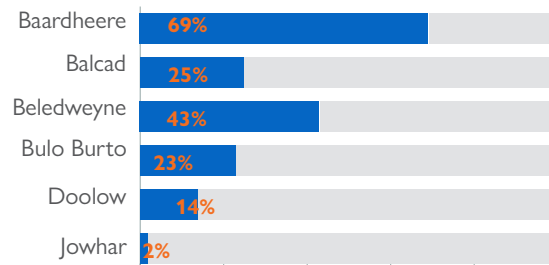
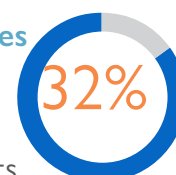
### Access to Education facilities

Thirty per cent have access to education facilities while 70% of the respondents do not have access.



### Access to Market Facilities

Thirty two per cent have access to market facilities while 68% of the respondents do not have access.



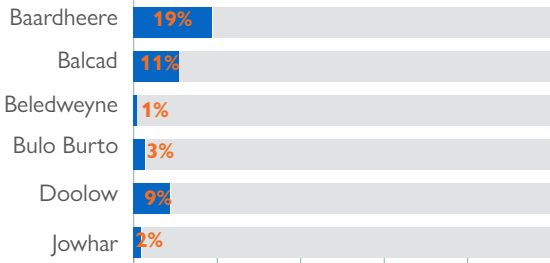
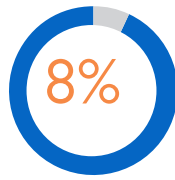
The majority of respondents from Baardhere and Beledweyne districts with access to education facilities, at 48% and 42% respectively. 97% and 84% of the respondents in Jowhar and Bulo Burto did not have access to education facilities. Host communities had least access at 21% compared to displaced population at 44% related to access to market facilities. Bulo Burto and Jowhar districts has the least responses at 14% and 2% respectively while the most was from Baardheere at 69%.



### Access to Sanitation Facilities



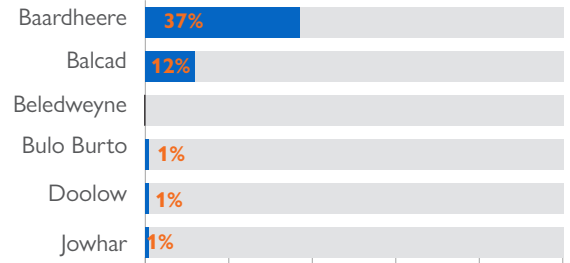
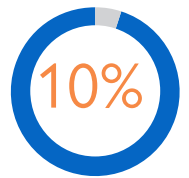
Eight per cent have access to sanitation facilities while 92% of the respondents do not have access.



### Access to Electricity



Ten per cent have access to electricity while 90% of the respondents do not have access.



The accessibility of sanitation services in the aftermath of floods was notably inadequate for both host and displaced communities, with access levels standing at 10% and 6% respectively. This deficiency was consistent across all six districts, with an overwhelming majority of respondents from Beledweyne, Jowhar, and Bulo Burto indicating limited to no access to sanitation services, at 99%, 98%, and 97% respectively. Regarding access to electricity, all respondents from Beledweyne reported no access, with a similar trend observed in Jowhar, Doolow, and Bulo Burto at 99%. Conversely, Baardheere had the highest proportion of respondents with access, at 37%.

## SOCIAL COPING MECHANISMS

The reliability and usability of early warning information is highly dependent on the uptake of the information received, and the necessary actions taken thereafter. From the assessment, it was found that 66% of the surveyed population admitted to disregarding the provided advice upon receiving early warning information, with Balcad district with 92 per cent of respondents in Balcad district disregarding advice and early warning. Only 34% of the respondents adhered to the instructions, with a majority residing in IDP sites at 40% in contrast to host communities at 30%. When respondents were asked if the disregard for early warning advice was influenced by cultural or religious beliefs, 66% of the respondents affirmed this perspective as shown in Table 7. The prevailing perception among respondents was that disasters are attributed to divine intervention and do not necessitate human intervention, followed by the belief that it is predetermined fate and requires no action. Notably, resistance to early warning predictions based on religious beliefs was the least reported factor.

66% of the respondents ignore or disregard early warning messages

34% of the respondents follow early warning messages

66% of the respondents who ignore or disregard early warning messages are influenced by cultural or religious beliefs

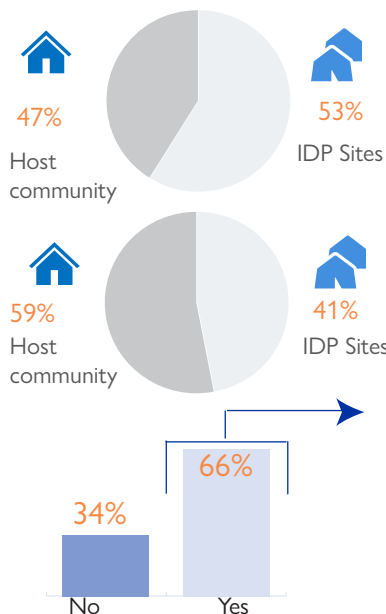


Table 7: Uptake of early warning received

District	Ignore instruction	Follow instruction
Balcad	92%	8%
Bulo Burto	58%	42%
Doolow	51%	49%
Jowhar	51%	49%
Beledweyne	54%	46%
Baardheere	78%	22%





**8%** of the respondents were aware of a contingency plan

**54%** of the respondents were not aware of a contingency plan

**38%** of the respondents did not know if a contingency plan exists.

Table 8: Availability of contingency plans

District	Yes	No	Do not know
Balcad	1%	1%	98%
Bulo Burto	7%	55%	38%
Doolow	1%	88%	11%
Jowhar	3%	88%	10%
Beledweyne	0%	64%	36%
Baardheere	34%	44%	22%

## INSTITUTIONAL COPING MECHANISMS

### Contingency planning

As part of disaster risk preparedness and response, contingency planning involves the identification of potential risks, the development of response protocols, and the allocation of necessary resources to minimize the impact of disasters. When participants were queried about their awareness of contingency plans within their respective districts, less than 10% were cognizant of any existing plan, with the majority, comprising 54% of respondents, indicating a lack of awareness regarding its existence, while 38% expressed uncertainty. Analysis disaggregated at district level is as summarised in Table 8 and Figure 16. Among those acknowledging the existence of a contingency plan, 87% cited community-driven initiatives, 8% attributed it to district government efforts, and 5% attributed it to the federal government. Regarding the frequency of updates to these contingency plans, 74% of respondents stated that updates typically occur every three months, aligning with seasonal shifts.

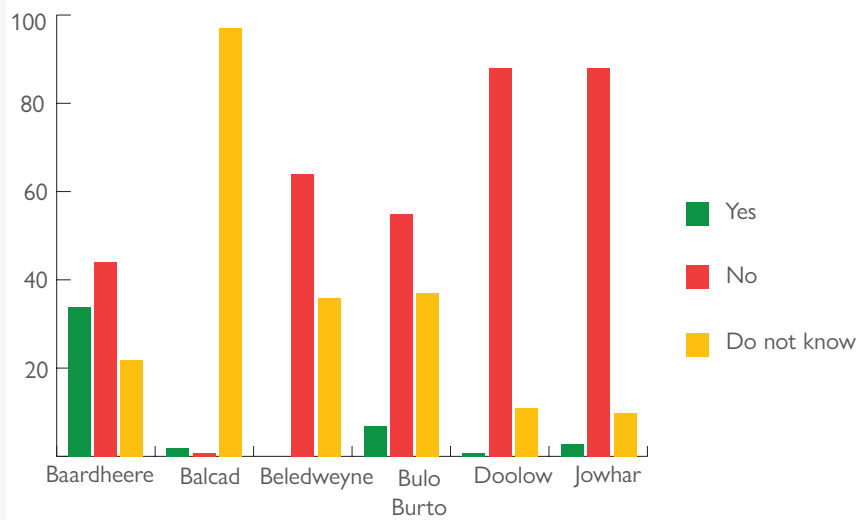


Figure 16: Available contingency plans in the assessed areas



**9%** of the respondents were aware of a flood disaster and coordination platform

**52%** of the respondents were unaware of a flood disaster and coordination platform

**39%** of the respondents were uncertain of a flood disaster and coordination platform

### Flood disaster management and coordination

Having a comprehensive flood disaster management and coordination platform is crucial for effective preparedness and response efforts. Such a platform facilitates the integration and synchronization of activities among diverse stakeholders, including government agencies, rescue services, and community organizations. It enables the timely sharing of critical information, such as early warning signals and evacuation orders, thereby enhancing the overall efficiency of response measures.

However, across the six flood-prone districts assessed in Somalia, the awareness and utilization of this disaster management and coordination platform was alarmingly low. Only 9% of the respondents were aware, while 39% were completely unaware. Concerningly, the majority, at 52%, expressed uncertainty about the availability of this essential coordination mechanism.

## DTM IN SOMALIA

IOM's Displacement Tracking Matrix (DTM) is a system to track and monitor displacement and population mobility. It is designed to regularly and systematically capture, process and disseminate information to provide a better understanding of the movements and evolving needs of displaced populations. DTM has been implemented in Somalia since 2016 with contextualized forms and tools for disaster and crisis responses.

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