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The Integrated Context Analysis (ICA) for Somalia

(2020)

WFP
World Food Programme

This analysis was commissioned by the United Nations World Food Programme Somalia. It was undertaken in collaboration with the Ministry of Planning, Investment and Economic Development (MOPIED) with the technical support by the WFP Regional Bureau Vulnerability Analysis and Mapping (VAM) unit, Nairobi.

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Ministry of Planning,
Investment and Economic
Development.

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Foreword

The Federal Government of Somalia launched the Ninth National Development Plan (NDP-9) in December 2019 to cover the period 2020-2024. The document provides the nation with a path leading to economic growth and reduction of poverty matrix in alignment with the seventeen (17) Sustainable Development Goals (SDGs).

One of the Key objectives in the Sustainable Development Goals aims to end hunger, achieve food security, improve nutrition and promote sustainable agriculture. In alignment of this critical goal, the government has taken food security as an integral component towards economic development and engaged the World Food Programme in the preparation of the Integrated Context Analysis (ICA).

The process was initiated with the guidance of the ministry of planning, Investment and Economic Development in 2018. Subsequently, consultations with all stakeholders including government institutions at all levels was held in Mogadishu in December 2019 as the findings and programmatic recommendations formulated from the consultative and informative engagement was endorsed as crucial for sustainable development in promoting resilience to disasters.

The Integrated Context Analysis is a continuous process which aims to capture new findings, new datasets and other relevant inputs that will inform decision-making in providing long and short term programmatic strategies. The World Food Programme has been a committed partner with the Ministry of Planning and I hope that the output of this exercise will help WFP's effective delivery of its work in Somalia.

I congratulate all contributors to the process and thank them for their support.

Abdikadir Mohamed Adan
Director General,
Ministry of Planning, Investment and Economic Development
Federal Government of Somalia.

Preface

To support countries in achieving the Sustainable Development Goals, the United Nations World Food Programme (WFP) and its partners provide humanitarian and development assistance to the most food insecure and vulnerable households and communities around the world. In many cases, the beneficiaries of WFP assistance live in fragile contexts or areas prone to frequent disasters and recurring shocks.

Somalia has been a major country of operation for WFP, and much of the organization's assistance in the past has been directed to meeting the emergency food needs of Somalis affected by conflict and natural disaster. However, conditions are changing and WFP, working with government, partners and other stakeholders, is now also focusing on strengthening the livelihoods of Somali communities, ensuring their long-term food security and building their resilience and capacity to manage shocks.

The Integrated Context Analysis (ICA) for Somalia was initiated in 2018 to support programme design in this evolving context. It feeds into the analysis of WFP's Interim Country Strategic Plan (ICSP) 2019-21, but also provides evidence to inform broader programmatic strategies, and can constitute a basis for related discussions with partners as well as a foundation for additional analyses and information.

With the recent launch of the ninth National Development Plan (NDP 9), outlining government priorities from 2020 to 2024, evidence-based needs identification such as that presented in the ICA is particularly timely to guide programmatic collaboration and focus between different actors aligned with the pillars of the NDP. The information generated can be used by the Government and partners to support overall programme design and to identify how efforts can be targeted and coordinated to maximize complementarity and mutual support, avoiding duplication or gaps.

I hope you will find this document, and the information it contains, useful.

Cesar V. Arroyo
Country Director & Representative
WFP Somalia

Acknowledgement

The Integrated Context Analysis (ICA) for Somalia is an initiative by United Nations World Food Programme (WFP) Somalia in collaboration with Ministry of Planning, Investment and Economic Development Somalia (MoPIED). The line ministries are The Ministry of Agriculture and Irrigation, The Ministry of Fisheries and Marine resources, Ministry of Humanitarian and Disaster Management and the Department of Statistics provided crucial inputs to the report. The members were from both the Federal Government Institutions and the Federal Member states of Puntland, South-West, Galmudug, Hirshabelle, Jubaland and the Banadir Regional Administration.

The report also benefitted from the technical inputs and data of the Food and Agricultural Organization of the United Nations (FAO), Food Security and Nutrition Analysis Unit (FSNAU), United Nations High Commission for Refugees (UNHCR), Soil and Water Land Information of FAO (SWALIM), the Famine Early Warning System Network (FEWS NET) and other institutions. During the entire process, valuable support provided by WFP Regional Bureau in Nairobi, VAM Unit.

Finally, and most importantly, we would sincerely thank all individual stakeholders and members who actively participated in ICA technical and programming consultation meetings. They generously spared their time and rendered valuable inputs towards validation of results and identification of broad programmatic strategies. Without this, the report would have not been possible.

Executive Summary

The Integrated Context Analysis (ICA) is a WFP corporate programme design tool used in over 20 countries around the globe. It provides evidence to inform broad programmatic strategies, a basis for discussion with partners and a foundation from which analysis and information can be expanded.

The ICA aims to: i) categorise livelihood zones by the level of recurrence of vulnerability to food insecurity, natural hazards, malnutrition, livelihoods and other relevant context factors; ii) provide trends in numbers of food insecure population at risk at the event of a shock, and the estimated long-term and seasonal caseloads for application in planning and programme design; iii) identify seasonal variations that should be considered in programme design to better align, complement and harmonise programme responses and interventions; iv) provide information for more effective medium- and long-term food security interventions related to resilience building and disaster risk reduction (DRR); and v) provide a set of relevant products and materials for advocacy, capacity building, future replication or update.

The ICA for Somalia includes two core dimensions (vulnerability to food insecurity and natural shocks, such as floods, drought and land degradation), four core lenses (nutrition, seasonality, livelihoods and population), and three contextual factors (markets, livestock and conflict and population movement). Livelihood zones are the geographic unit of analysis.

Technical analysis and broad programmatic recommendations are based on the combined level of recurrence of the two core dimensions and as a result, ICA defines five categories and related areas to help formulate broad programmatic recommendations. For Somalia, the analysis classifies 19 livelihood zones into seven different ICA areas (Map 1) which are further condensed into four ICA categories that highlight the programming implications.

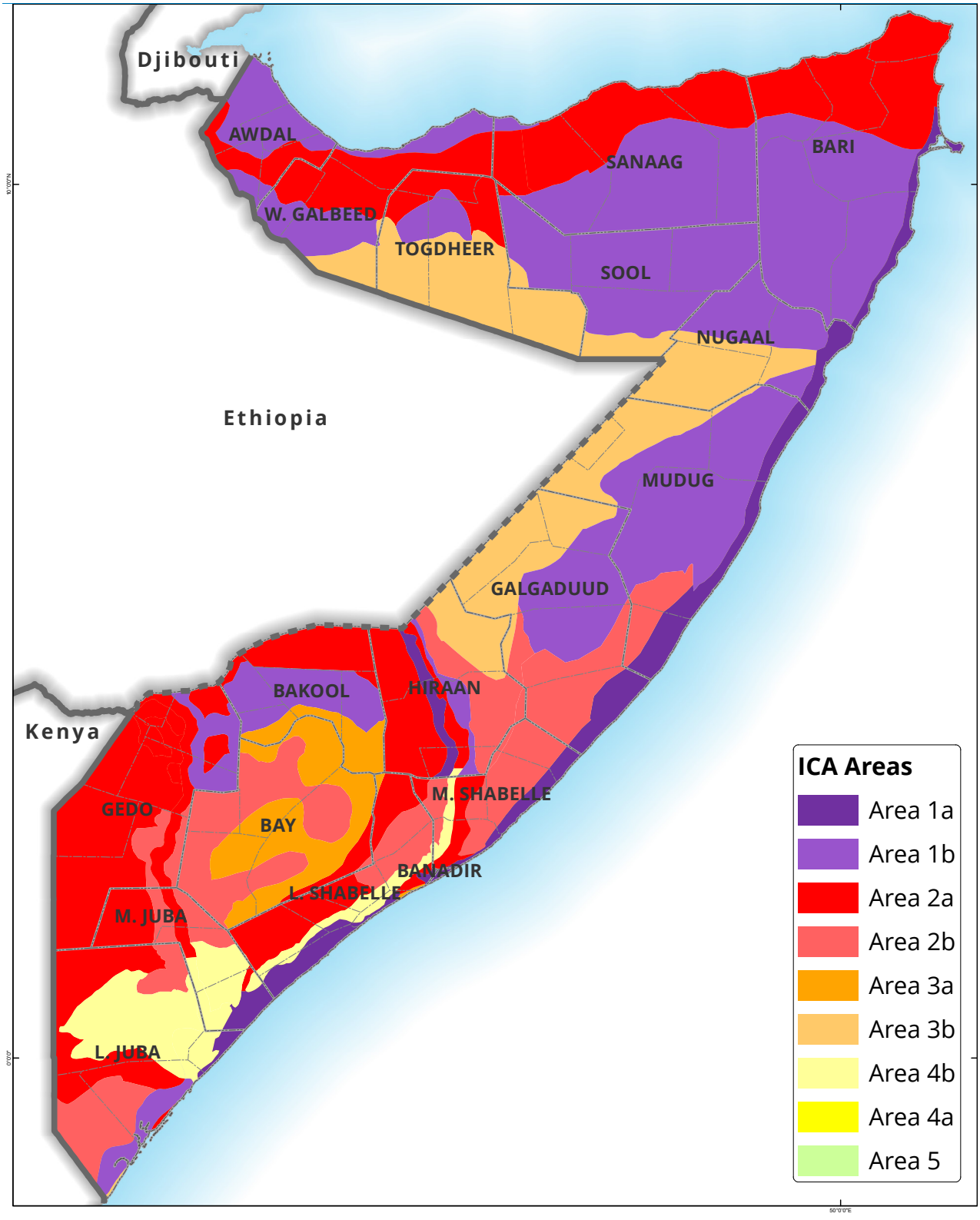
Category 1 comprises of eight livelihood zones that experience protracted food insecurity and frequent natural shocks. These livelihood zones would benefit from food security focused safety nets and comprehensive DRR interventions, including infrastructure improvement, early warning measures and disaster preparedness.

Category 2 comprises of six livelihood zones that experience seasonal food insecurity and are at high to medium risk for natural shocks. In these livelihood zones, flexible food security safety nets and need-based livelihood recovery efforts during unfavourable years could protect marginal households against negative coping strategies that undermine development gains. High risk levels for natural hazards suggest broad DRR interventions, including infrastructure improvement, early warning measures and disaster preparedness.

Category 3 comprises of four livelihood zones that suffer from chronic food insecurity, likely due to non-climatic causes. Year-round protective livelihoods and safety nets is are ideal for ICA area 3a, whereas in ICA area 3b, livelihoods, flexible safety nets, or livelihood recovery/protection programmes would be more relevant.

Category 4 comprises of two livelihood zones that experiences low food insecurity and medium risk for natural shocks. In theses livelihood zones, during unfavourable years, flexible food security interventions to vulnerable population against utilizing negative coping strategies. The medium or high levels of natural shocks point towards DDR interventions such as early warning, disaster preparedness that include infrastructure improvement.

Map 1: ICA areas based on food insecurity, shocks, land degradation



Populations experiencing recurring and acute food insecurity: Over the period of analysis (2013–2018), on average 1.53 million people were recurrently food insecure and on average a minimum of 793,000 and a maximum of 3 million people were food insecure and are likely to be food insecure in the future. In addition, 1.5 million people were acutely food insecure due to natural shocks, such as droughts and floods.[1]

Level of seasonal food insecurity: The level of food insecurity varies with season. When comparing figures for each season, the number of people estimated as food insecure over the years was on average 1.432 million during *gu* and 1.623 million during *deyr* seasons.[2] The estimated additional number of people likely to fall into crisis should a natural shock occur was 919,000 during *gu* and 1.197 million during *deyr*.

Distribution of food insecurity and intensity: By combining the phase classification and proportion of population affected, the analysis revealed high food insecurity levels in the following livelihood zones: Northern Inland Pastoral, Guban Pastoral, Coastal Dheeh Pastoral and Fishing, Southern Agropastoral, and Southern Inland Pastoral. The rest of the country was under medium food insecurity level. There is high level of food insecurity among IDPs in Bari, Mudug, Sool, Bay, Lower Juba and Bakool regions.

Nutrition: Malnutrition is of concern in southern areas and surveys conducted in the past revealed that Global Acute Malnutrition (GAM) levels exceeded 15 percent (signifying a critical situation). The combined phase classification and frequency of GAM above critical levels (>15 percent) over the 2012–2018 period reveal high risk in Southern Inland Pastoral, Sorghum High Potential, Bay-Bakool Low Potential Agropastoral, Riverine Pump Irrigation and Southern Agropastoral livelihood zones. In the north, only Addun Pastoral livelihood zone has high levels of malnutrition. Some of the areas with high levels of malnutrition in the south are poorly served by health facilities, the main outlets for nutrition interventions. Enhanced coverage is needed to reach vulnerable populations in such locations and this can be achieved by using mobile facilities or other innovative approaches. In addition, nutrition situation among IDPs is worrisome as several settlements had steady critical GAM levels.

Natural shocks and land degradation: Riverine floods and droughts are the most common natural shocks that affect several areas of Somalia. Flood incidences are common in the southern region of the country, especially in areas along Juba and Shabelle rivers and therefore, livelihood zones that are in proximity are most affected. The unavailability of data on areas affected by flash floods and the frequency of occurrences was a challenge in the overall flood risk analysis.

Between 1998 and 2017, meteorological droughts resulting from insufficient rainfall affected the southern areas and parts of central and northwest areas more than the rest of the country. The least affected livelihood zones are the Northern Inland Pastoral, parts of Hawd Pastoral and Guban Pastoral where a maximum of two meteorological drought conditions were recorded. Aggregation by livelihood zones shows that areas under high risk of meteorological droughts are the Southern Inland Pastoral, Juba Pastoral, Northwest Agropastoral, parts of Southern Agropastoral and the Riverine zones. Similarly, agricultural droughts over the 2001–2017 period were high in southern areas with the most affected areas being along the riverine basins, where agriculture is normally practiced, and in pastoral areas near the Kenyan border. Thus, the most affected livelihood zones are Southern Inland Pastoral, Riverine Irrigation and the Sorghum High Potential Agropastoral. Both meteorological and agricultural droughts are common during the *deyr* season, which increases the risks of poor crop production more so during *deyr* than in the *gu* season.

The combined meteorological and agricultural droughts reveal that the southern regions are at higher risk compared to the rest of the country. This is quite sensitive given that the main food producing areas of the country are in the south, and negative impacts of droughts would continue to threaten food security. It also poses great risk to livestock production in both agropastoral and pastoral zones.

1 The figures are average of long-term trend for planning and programme design. Hence, not official statistics.

2 *Gu* and deyr are the names given to the two rainy seasons in Somalia. *Gu* rains typically begins in April and last until June. *Deyr* rains last from October to November.

Land degradation is another risk factor in many areas of Somalia. A combination of severity factor and proportion of livelihood zones' surface area degraded under moderate to very high identified Guban Pastoral, West and East Golis, Northern Inland Pastoral and Coastal Dheeh Pastoral and Fishing livelihood zones at high risk. Most of these zones are in the north, which is relatively hilly and has increased susceptibility to soil erosion.

The combination of natural shocks and land degradation shows that a greater portion of the country faces moderate to high risk, especially areas along Shabelle river basin, the coastal strip, East and West Golis livelihood zone, Southern Rainfed Agropastoral and Southern Inland Pastoral livelihood zones.

Other factors: While natural shocks, food insecurity and malnutrition increase risks among populations in the various livelihoods at varying degrees, there is need to strengthen market performance to facilitate effective flow of food commodities and livestock marketing. Some areas do not produce food and populations rely on markets to procure food despite poor accessibility in some locations. Staple food prices fluctuated over time, with peaks during periods of reduced production due to climate shocks such as droughts. Efforts to cushion vulnerable households purchasing power, through cash transfers and support to traders, during such periods would help maintain the supply and consequently sustain food security.

Conflicts affect many areas of Somalia and humanitarian workers have not been spared either. Historical events indicate occurrence of conflict in some of the highly populated areas, some of which are in the most productive parts of Somalia, such as Shabelle basin and Bay, Bakool and Gedo regions. Instances of violence pose a great threat to food security and nutrition. Presence of violent conflict limits access to productive activities and negatively affects transportation of goods and services.

Acronyms and Abbreviations

ACLED	The Armed Conflict Location & Event Data Project
CV	Coefficient of Variation
DRR	Disaster Risk Reduction
FAO SWALIM	Food and Agriculture Organization Soil and Water Land Information System
FAO	Food and Agriculture Organization of the United Nations
FEWS NET	Famine Early Warning System Network
FSNAU	Food Security and Nutrition Analysis Unit
GAM	Global Acute Malnutrition
GIS	Geographic Information System
HGSF	Home Grown School Feeding
ICA	Integrated Context Analysis
ICPAC	IGAD Climate Prediction and Applications Centre
IDPs	Internally Displaced Persons
IPC	Integrated Food Security Phase Classification
livelihood zone	Livelihood Zone
MESA	Monitoring of the Environment for Security in Africa
MODIS	Moderate Resolution Imaging Spectroradiometer
NCA	Nutrition Causal Analysis
NDVI	Normalized Difference Vegetation Index
NPGS	Number of Poor Growing Seasons
RCMRD	Regional Centre for Mapping of Resources for Development
RUSLE	Revised Universal Soil Loss Equation
SPI	Standardized Precipitation Index
UNFPA	The United Nations Population Fund
UNHCR	United Nations High Commission for Refugees
WFP	World Food Programme
IYCF	Infant and Young Child Feeding

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Chapter 1
Objectives of the ICA and methodology

1.1 Background

This report provides the technical analysis based on the Integrated Context Analysis (ICA) procedure in Somalia. The technical analysis has been broadened to include other relevant aspects that are deemed to influence food and nutrition security. The ICA provides an evidence-based analysis, programmatic implications and conclusions that could inform implementing agencies of the broad programmatic strategies (including resilience building, disaster risk reduction, and social protection) that are appropriate for the different livelihood zones of Somalia.

The ICA is based on principles of historical trend analyses conducted across several technical and sectoral disciplines. The analyses overlay or cross-tabulate different thematic areas to provide geographic areas with convergence of factors (hazards/shocks, food security and nutrition) and programmatic implications thereof. Trend analyses provide an understanding of what has happened in the past and offer a basis for projecting the indicators into the future as a proxy of the situation as well as providing short-, medium- and long-term programming requirements. This ICA is based on trends in food security, main natural shocks (floods and droughts) and land degradation resulting from natural and anthropogenic factors as core issues that drive food security. In addition, factors such as GAM, seasonality, presence of livelihood zones, population density, access to markets, livestock, conflict and population movement were built into the analysis as other factors that influence vulnerability. The element of climate risk measured through a combination of Standardized Precipitation Index (SPI) (meteorological droughts), vegetation conditions (proxy of agricultural droughts) and the seasonality impact was also built into this ICA.

Through a combination of recurring food insecurity and shock risks, in a Geographic Information System (GIS) environment, it was possible to identify combinations of broad programmatic strategies that may be required to address the challenges of food insecurity and vulnerability to natural risks in a holistic manner.

1.2 Partnerships

This report was generated by the WFP, with contributions from the Ministry of Planning, Investment and Economic Development - Somalia (MoPIED), FAO, Food Security and Nutrition Analysis Unit - Somalia (FSNAU), Soil and Water Land Information Management of FAO (FAO SWALIM), the Famine Early Warning System Network (FEWS NET) and United Nations High Commission for Refugees (UNHCR).

1.3 Objectives

The overall objective of this analysis is to provide evidence to inform broad programmatic strategies, a basis for discussion with partners and a foundation from which additional analysis and information can be expanded. More specifically, the analysis aimed to:

- categorise livelihood zones by the level of recurrence of vulnerability to food insecurity, natural hazards, malnutrition, livelihoods and other relevant context factors;
- provide trends in numbers of food insecure population at risk at the event of a shock, and the estimated long-term and seasonal caseloads for application in planning and programme design;
- identify seasonal variations that should be considered in programme design to better align, complement and harmonise programme responses and interventions;
- provide information for more effective medium- and long-term food security interventions related to resilience building and DRR; and
- provide a set of relevant products and materials for advocacy, capacity building, future replication or update.

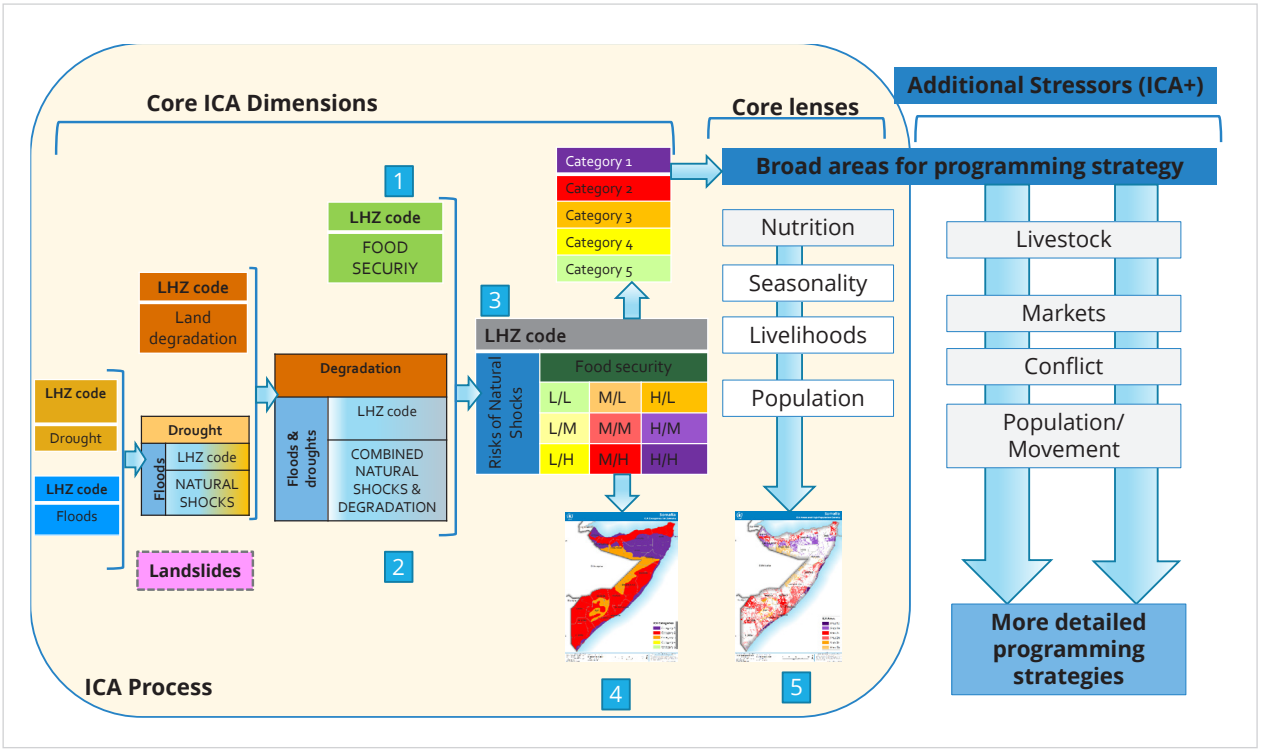
This information can be used by governments and partners to support overall programme strategy design. The ICA can be used to target efforts and government and partners can be better coordinated in ensuring that their programming supports and complements each other's efforts, thus avoiding duplication and gaps.

1.4 ICA process

An ICA begins by analysing data on vulnerability to food insecurity as a core dimension indicated as Step 1 in Figure 1 below. In Step 2, using cross tabulation, data on the three other core dimensions (flood, drought and land degradation) is analysed to form a consolidated layer of natural hazards. In Step 3, results of Step 1 and Step 2 are combined (by using cross tabulation) to identify nine ICA areas depicting relative standing of livelihood zones with regards to their vulnerability to food insecurity and combined natural hazards.

In Step 4, the nine ICA areas are grouped into five Categories to simplify for visual interpretation and framing of broad programmatic recommendations relevant to each category. In Step 5, each of the Core Lenses and the Contextual Information Layer is overlaid on the ICA areas to refine the programmatic recommendations formed in Step 4.

Figure 1: Analytical steps employed in the analysis



1.5 Analysis of core ICA dimensions

1.5.1 Vulnerability to food insecurity

The analysis used 12 rounds of food security data, collected by the Food Security and Nutrition Analysis Unit-Somalia (FSNAU), spanning from *gu* 2013 through *deyr* 2018 and in line with the Integrated Food Security Phase Classification (IPC) methodology. This data includes information on indicators, such as livelihood strategies (food and income sources, expenditure and coping strategies), livelihood assets (human, financial, physical, natural and social) and an integrated sectoral analysis that is proximate to underlying causes of food insecurity. Through cross-tabulation of these indicators, households are classified into five IPC phases: None/Minimal (Phase 1), Stressed (Phase 2), Crisis (Phase 3), Emergency

(Phase 4) and Catastrophe (Phase 5). In addition, the proportion of the population by livelihood zone or administrative unit in each phase is generated.

The available food security data was disaggregated at both livelihood zones and administrative units (regions and districts). The analysis focused on livelihood disaggregated data and information to understand the food insecurity dynamics among rural and IDP populations with similar livelihood characteristics. The option of using IPC data was based on availability over the preferred time-period of analysis (2012–2018).

The food security analysis considered two aspects that were later triangulated to provide the overall situation:

- the frequency of IPC in each livelihood zone from *gu* 2012 to *deyr* 2018. The recurrence was multiplied by severity to provide a weighted score that was ranked and the results classified into three terciles depicting low (1), medium (2) and high (3); and
- the proportion of population in phases 3 to 5 in each livelihood zone over the same period. A threshold of 20 percent was set considering the traditional mapping protocol that requires the phase classification to have at least 20 percent of the population. Each livelihood zone was then weighted and ranked based on the number of rounds with proportions greater than the threshold, the difference between the average food security value and that of national average (the greater the difference the more serious the food security situation), and the amount of fluctuation of the area values over the last seven years from the area's own average value.

The results of the two were cross-tabulated to show areas of very low to very high food insecurity and then classified into three classes based on the ICA thresholds as stated below.

	Frequency of phase classification		
Proportion of population above 20% threshold	**Low (1)**	**Medium (2)**	**High (3)**
Low (1)	Very Low	Low	Moderate
Medium (2)	Low	Moderate	High
High (3)	Moderate	High	Very High

Frequency of phase classification X % of population by livelihood zone			
		3–4	**5–6**
ICA reclassification	Low (1)	Medium (2)	High (3)

An estimated long-term planning figure was calculated by considering the average number of severe food insecure population (IPC phase 3 to 5) from the twelve rounds of IPC datasets (from *gu* 2012 to *deyr* 2018). In addition, the maximum number of food insecure population (acute food insecurity) that could result in case of a shock was determined by considering the average of the two highest figures recorded in the 12 rounds; while the number of people who are persistently food insecure (experiencing chronic food insecurity) was determined by considering the average of the two lowest. A consideration of a short-term period of between 2014 and 2018 was made given the changes in food insecurity that have occurred in the recent years. The difference between the acute and the long-term planning average provided an estimate of possible incremental number of people who could slip into severe food insecurity should a shock event occur. The approach was repeated in calculation of estimated food insecure people during *gu* and *deyr* seasons.

1.5.2 Vulnerability to natural hazards

Floods and droughts are the two main natural shocks that affect Somalia, while landslides due to precipitation only occur in isolated areas of the north. It was decided that the analysis incorporate only floods and droughts since they affect more areas and people.

a. Rapid onset shocks (floods)

Given limited availability of historical secondary data on floods for Somalia, a shapefile of flood risk areas generated by FAO SWALIM for the period 2002–2006 was obtained and converted into grid data for use in the analysis.

Based on the gridded dataset, the percentage surface area of each livelihood zone under risk of flooding was calculated and categorised into three classes in a GIS environment. Similarly, the flood frequency was extracted by livelihood zone and categorised into three classes and incorporated into the analysis. The thresholds used are indicated in steps 1 and 2.

1. Calculation of surface percentage of flood prone areas with results categorised into three classes

Percent of surface area at flood risk by livelihood zone			
% of surface area at flood risk	**<= 4.3%**	**4.31%–13.4%**	**> 13.4%**
ICA reclassification	Low (1)	Medium (2)	High (3)

2. Estimated frequency of flood events with results categorised into three classes

Maximum flood frequency by livelihood zone			
Maximum flood frequency	**0 events**	**1–4 events**	**5–8 events**
ICA Reclassification	Low (1)	Medium (2)	High (3)

The results of the two calculations were combined into a single layer expressing the flooding risk situation extent (i.e. percentage of flood prone surface area) and the frequency of occurrence by livelihood zone. The results were classified into three classes based on natural jenks in ArcGIS to reveal areas with low, medium and high flooding risks.

	Maximum flood frequency		
% of surface area at flood risk by county	**Low (1)**	**Medium (2)**	**High (3)**
Low (1)	Very Low	Low	Moderate
Medium (2)	Low	Moderate	High
High (3)	Moderate	High	Very High

Maximum flood frequency X % of surface area at flood risk by livelihood zone			
	2	**3–4**	**5–6**
ICA Reclassification	Low (1)	Medium (2)	High (3)

The limitation of this dataset was that it considered river-based flooding while placing less emphasis on areas that are affected by flash floods from time to time. Hence, the flood risk analysis could not incorporate the risk posed by flash floods.

b. Slow onset shocks (droughts)

Droughts result from insufficient rain (also known as meteorological drought) or from inadequate soil moisture to support vegetation growth leading to stressed conditions and failure of crop growth (also known as agricultural drought). Both meteorological and agricultural droughts were analysed and thereafter combined to reveal the most affected areas. This was based on the fact that while meteorological droughts result from insufficient rain, it is the agricultural drought that significantly affects the population as inadequate soil moisture compromises production, crop and pasture production.

The analysis of **meteorological** droughts used remotely sensed blended CHIRPS data to calculate the Standardised Precipitation Index (SPI) using GeoCLIM software. The seasonal SPI for the *gu* (April–June) and *deyr* (October–December) seasons was generated for the last 20 years (1998–2017), giving a total of 40 rounds to consider. The results of each season were reclassified into drought (-1.00 and below) and non-drought (above -1.00) based on the McKee et. al. (1993)[3] thresholds. A summation of the seasonal results showed the frequency of moderate to severe droughts per pixel. Thereafter, the average number of droughts per livelihood zone were extracted using zonal statistics and categorised into three terciles.

1. Computation of drought years based on standardised precipitation index figures

Average number of drought seasons by livelihood zone			
Average number of drought seasons	**< 2.55**	**2.55–3.83**	**>3.83**
ICA reclassification	Low (1)	Medium (2)	High (3)

Computation of **agricultural** droughts relied on remotely sensed Normalized Difference Vegetation Index (NDVI) of vegetation growth by the Moderate Resolution Imaging Spectroradiometer (MODIS)[4] as a proxy to drought. The analysis primarily focused on the greening period from April to July due to the *gu* rains, and from October to December during the *deyr* season. The assumption was that poorer vegetation growth resulted from stressed water conditions.

Using the available data from 2001 to 2017, a seasonal NDVI was computed based on maximum NDVI attained during each of the growing periods. A 17-year long-term (NDVI) average was computed as a benchmark for comparison in each growing period.

The seasonal NDVI was compared against the long-term average benchmark and areas below 90 percent were considered as having experienced some moderate to severe growing conditions. A summation over the last 17 years provided an estimate of the Number of Poor Growing Seasons (NPGS). The basic assumption behind this comparison is that if the vegetation growth in a particular growing season was considerably below the longer-term average, it would indicate water stress or drought conditions for vegetation growth in that livelihood zone. The average number of poor growing seasons per livelihood zone were then extracted using zonal statistics and classified into three classes using natural jenks as shown in table below.

Average number of poor growing seasons by livelihood zone			
Prevalent number of poor growing seasons	**<0.89 PGSs**	**0.9–2.22 PGSs**	**>2.22 PGSs**
ICA reclassification	Low (1)	Medium (2)	High (3)

Finally, the results of the meteorological and agricultural droughts were combined and reclassified to better understand the spatial distribution of drought conditions.

3 McKee, Thomas B., Doesken, Nolan J., and Kleist, John, 1993, The Relationship of Drought Frequency and Duration to Time Scales. Eight Conference on Applied Climatology, 17–22 January 1993, Anaheim, California. http://www.droughtmanagement.info/literature/AMS_Relationship_Drought_Frequency_Duration_Time_Scales_1993.pdf

4 This was due to high resolution at 250 m but started operations in 2000, hence, data availability spanned from 2001 to present. See link for more information. https://terra.nasa.gov/about/terra-instruments/modis

	Average number of poor growing seasons by livelihood zone		
Average number of meteorological droughts	**Low (1)**	**Medium (2)**	**High (3)**
Low (1)	Very Low	Low	Moderate
Medium (2)	Low	Moderate	High
High (3)	Moderate	High	Very High

Average number of poor growing seasons & Average number of meteorological droughts by livelihood zone			
	2	**3–4**	**5–6**
ICA Reclassification	Low (1)	Medium (2)	High (3)

c. Combined natural shocks (floods and droughts)

The results of floods and droughts risk scores were combined into a single layer depicting the natural shocks risk score with variation from very low- to very high-risk occurrence, which was then classified into the three ICA levels as shown below.

	Drought risk score by livelihood zone		
Flooding risk by livelihood zone	**Low (1)**	**Medium (2)**	**High (3)**
Low (1)	Very Low (2)	Low (3)	Moderate (4)
Medium (2)	Low (3)	Moderate (4)	High (5)
High (3)	Moderate (4)	High (5)	Very High (6)

Exposure to natural shocks (combined) by livelihood zone			
Exposure to natural shocks (combined values)	**2**	**3–4**	**5–6**
ICA reclassification	Low (1)	Medium (2)	High (3)

d. Land degradation

Land degradation is a major environmental problem affecting many areas of Somalia because of natural (climatic) and anthropogenic factors, such as unsustainable land uses. Identified in affecting production with consequent implications on food security and nutrition, land degradation was included as a major factor. Seven seasonal land degradation index data generated by the Regional Centre for Mapping of Resources for Development (RCMRD) in collaboration with IGAD Climate Prediction and Applications Centre (ICPAC)/Monitoring of the Environment for Security in Africa (MESA) from year 2005 to 2014 were available providing the severity level of degradation per pixel in the range of 1 (very low) to 5 (very high). The land degradation index is a composite based on Revised Universal Soil Loss Equation (RUSLE) model adapted to suit local environments and combines several factors related to land conformation (i.e. slope), vegetation cover and quality, precipitation, soil type and erosivity, and population density (livestock and humans). Weights and threshold are then applied to the factors to generate the 5 classes of degradation from very low degradation (1) to very high degradation (5). Six indexes of land degradation spanning from 2010 - 2014 were used in the analysis because of data availability.

The average severity level of degradation per pixel was computed to provide an overall situation for the 2010–2014 period in assumption that degradation takes time to recover. From the resulting average image, the average severity level of degradation and the proportion of surface area under level 3 and above (moderate to very high) for each livelihood zone was calculated and categorised into 3 classes (step 1 and 2). The results of severity and percent surface area were then combined and categorised into 3 classes as shown below (step 3).

1. Computation of severity of degradation by livelihood zone

Average level (severity) of degradation by livelihood zone			
	<2.34	**2.34–3.44**	**>3.44**
ICA reclassification	Low (1)	Medium (2)	High (3)

2. Computation of surface area that falls under moderate to very high degradation by livelihood zone

Percent surface area under moderate to very high levels of degradation by livelihood zone			
	<29%	**30%–70%**	**>70%**
ICA reclassification	Low (1)	Medium (2)	High (3)

3. Computation of the combined severity and proportion of surface area

	Proportion of livelihood zone under level 3 & above		
Severity/level of degradation	**Low (1)**	**Medium (2)**	**High (3)**
Low (1)	Very Low (2)	Low (3)	Moderate (4)
Medium (2)	Low (3)	Moderate (4)	High (5)
High (3)	Moderate (4)	High (5)	Very High (6)

Proportion of livelihood zone under level 3 & above			
Exposure to shocks	**2–3**	**4**	**5–6**
ICA Reclassification	Low (1)	Medium (2)	High (3)

e. Combined natural shocks (floods and droughts) and land degradation

The results of natural shocks (floods and droughts risk score) and land degradation were combined into a single layer depicting the overall shocks risk score and classified into three ICA levels as shown below.

	Land degradation risk score		
Flooding & droughts risk score	**Low (1)**	**Medium (2)**	**High (3)**
Low (1)	Very Low (2)	Low (3)	Moderate (4)
Medium (2)	Low (3)	Moderate (4)	High (5)
High (3)	Moderate (4)	High (5)	Very High (6)

Combined exposure to shocks by livelihood zones			
Exposure to shocks	**2–3**	**4**	**5–6**
ICA Reclassification	Low (1)	Medium (2)	High (3)

1.6 Analysis of ICA core lenses

1.6.1 Nutrition

The analysis of nutrition in Somalia relied on the Global Acute Malnutrition (GAM) data collected and analysed by FSNAU over the 2013-2018 period.[5] The data measures the proportion of children aged 6–59 months with a weight-for-height below -2 z-score as per WHO growth standards. Two aspects of GAM were considered at the livelihood zone level: median prevalence rate of GAM and the frequency of prevalence rates above the WHO threshold of 15 percent. Each of the two aspects was classified into three as shown below.

1. Classification of median GAM rates by livelihood zones (livelihood zone)

	Median GAM rate levels by livelihood zone		
Median GAM for years	**< 9.9**	**10–14.9**	**> 15**
ICA reclassification	Low (1)	Medium (2)	High (3)

2. Estimated frequency of critical and very critical GAM occurring with results categorised into three classes

Maximum frequency above critical GAM rates by livelihood zone			
Maximum GAM frequency (6-year, with 12 seasons)	**0–5 seasons**	**6–9 seasons**	**>10 seasons**
ICA reclassification	Low (1)	Medium (2)	High (3)

The results of the two were combined into a single layer expressing the nutrition situation over the period of analysis by livelihood zone, which was further classified into three ICA levels of low, medium and high.

	Frequency of GAM above critical		
Median GAM rate by livelihood zone	**Low (1)**	**Medium (2)**	**High (3)**
Low (1)	Very Low	Low	Moderate
Medium (2)	Low	Moderate	High
High (3)	Moderate	High	Very High

GAM prevalence X frequencies above critical threshold by livelihood zone			
	2	**3**	**>3**
ICA Reclassification	Low (1)	Medium (2)	High (3)

Food insecurity and malnutrition results were further combined into a single layer to identify areas facing both vulnerabilities; and the outcome categorised according to three ICA levels as below.

	Food insecurity by livelihood zone		
Nutrition situation by livelihood zone	**Low (1)**	**Medium (2)**	**High (3)**
Low (1)	Very Low	Low	Moderate
Medium (2)	Low	Moderate	High
High (3)	Moderate	High	Very High

Food insecurity and nutrition situation by livelihood zone			
	2	**3**	**>3**
ICA Reclassification	Low (1)	Medium (2)	High (3)

5 DHS available data was not sufficient for running trend analysis. Analysis is for planning and programme design.

1.6.2 Seasonality

The analysis of seasonality in relation to food security for Somalia considered the two main seasons (*gu* and *deyr*) during which IPC analyses are normally conducted. The severity of food insecurity for each season was analysed following similar steps mentioned in section 1.5.1. For trend analysis, the 19 livelihood zones were grouped into three: pastoral, agropastoral and others, and the total rural population for each grouping was established. The total and proportion of food insecure (IPC phase 3 to 5) for each grouping was then calculated for each season. This helped in identifying the dynamics of food insecure populations by main livelihood type.

For rainfall inter-annual variability, the Somalia seasonal calendar developed by FEWSNET was used to identify the main months during which the country experiences the *gu* (from April to June) and *deyr* rains (from October to early December). The Coefficient of Variation (CV) was analysed based on seasonal rainfall totals for the last 20 years for both seasons. Similarly, using the seasonal calendar and consultations, the main growing periods for *gu* and *deyr* were identified. The CV was then established based on the seasonal maximum NDVI to inform the dynamics in vegetation condition from year to year.

1.6.3 Livelihoods

Information generated by FEWSNET/FSNAU in 2015 on livelihoods was obtained and mapped to show the spatial distribution and extents of livelihood zones. This was overlaid with settlements, each assigned with the respective ICA categories, with the aim of identifying concentration in high food insecurity and shock risks areas.

1.6.4 Population

The 2014 population estimates for Somalia by The Directorate of National Statistics (DNS)[6] with support from United Nations Population Fund (UNFPA) were analysed to show the spatial distribution of rural and total population by livelihood zone. Population density was further analysed based on LandScan[7] 2015-a global dataset that estimates densities based on land cover, roads, slope and villages among other factors-to show spatial distribution by number of persons per square kilometre. Areas with population density above six (average household size for Somalia as per UNFPA 2014 estimate) were overlaid with ICA areas to illustrate areas of human concentration that are characterised by high food insecurity and shocks risk.

1.7 Additional contextual information

In Somalia food and nutrition insecurity is driven by additional stressors including, functioning of livestock and food commodity markets, inadequate resources for livestock, and impacts of conflicts and/or insecurity. The following sections outline how these were incorporated in the analysis.

1.7.1 Market flows and accessibility

Markets play a critical role in movement of food from areas of surplus production or ports of entry for imported commodities to areas with no or deficit production. Similarly, markets allow households to sell livestock to raise income for buying food. Using available market information by FEWS NET, the trade flows of locally produced and imported food commodities were analysed to identify areas where access to food could be challenged by limited production or difficulty in accessing markets. The trends of market prices of major staples (red sorghum, imported rice and white maize) and livestock (goat – local quality) were also analysed to understand the price dynamics. The terms of trade (ToT) for goat against these major food commodities were further analysed to assess how the purchasing power changed from 2010 to 2019.

6 Population estimation survey 2014:- http://www.dns.org.so/population-estimation-survey-2014/

7 https://landscan.ornl.gov

Similarly, the analysis considered livestock production and trade flows to understand where livestock markets could be challenged due to poor access to market facilities.

Using a GIS model, the analysis explored potential areas with limited physical accessibility to known markets. The model incorporated information on transportation, nature of terrain and topography, possible restrictions imposed by boundary crossings, vegetation types and rivers, and location of markets.

1.7.2 Livestock production

Livestock production supports livelihoods of pastoralists and agropastoralists in Somalia. However, seasonal changes result in variation in the supply of livestock grazing resources (water and pasture). Such seasonal changes often lead to outmigration of livestock. The analysis mapped the distribution of water points in relation to known grazing areas and known livestock migration patterns. This was overlaid with areas of high food insecurity to explore if there is any association from a spatial context.

1.7.3 Conflicts and population movement

Conflicts influence food security by limiting access to certain locations, hindering the transportation and supply of needed food commodities through market channels, displacing populations, curtailing productive activities and disrupting livelihoods. Data compiled by the Armed Conflict Location & Event Data Project (ACLED)[8] was analysed to reveal trends and areas most affected by conflicts since 2000. Additionally, data on aid workers affected by conflicts was obtained from the Aid Workers Security Database[9] to show where previous attacks on humanitarian responders have occurred as insecurity increases operational risk and that could obstruct assistance to needy populations. The analysis further looked at human displacement from 2012 to present data from UNHCR[10] to show hotspots of displacement and relocation.

8 https://www.acleddata.com/

9 https://aidworkersecurity.org/

10 https://unhcr.github.io/dataviz-somalia-prmn/index.html

Over the period of analysis (2012–2018), on average **1.53 million people** were **recurrently food insecure** and on average a minimum of 793,000 and a maximum of **3 million people** were **food insecure** and are likely to be food insecure in the future. In addition, **1.5 million people** were **acutely food insecure** due to natural shocks, such as droughts and floods.

Chapter 2
Findings

2.1 Food security

2.1.1 Overall food security trends

At a national scale, the total number of food insecure people (moderate level i.e. stressed) and severely affected population (crisis and emergency level) has generally been on the increase since 2013 (Figure 2) with a notable increase in population that is severely affected by food insecurity since the *deyr* season of 2016 (the last three IPC rounds). For IDPs the numbers increased from 2015 *gu* season onwards, probably due to population revision in 2014, and has remained nearly the same since then. Since the *deyr* 2013 season, over 500,000 people have been classified under IPC phase 3 (crisis) and IPC phase 4 (emergency). However, the food insecurity levels witnessed during *gu* 2017 were similar to those witnessed during the *gu* 2011 famine when 260,000 people died. Because of early warning measures, early action and a concerted humanitarian response, the high levels of food insecurity in 2017 did not result in the famine situation witnessed in 2011.

Figure 2: Trend in number of food insecure people: total and IDPs

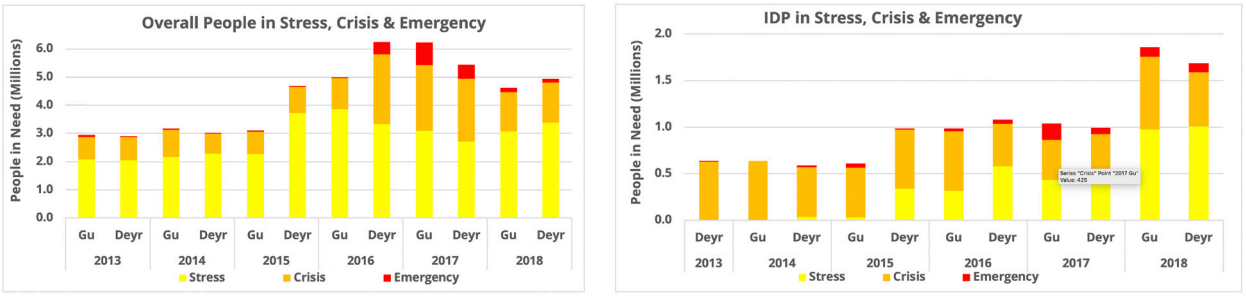
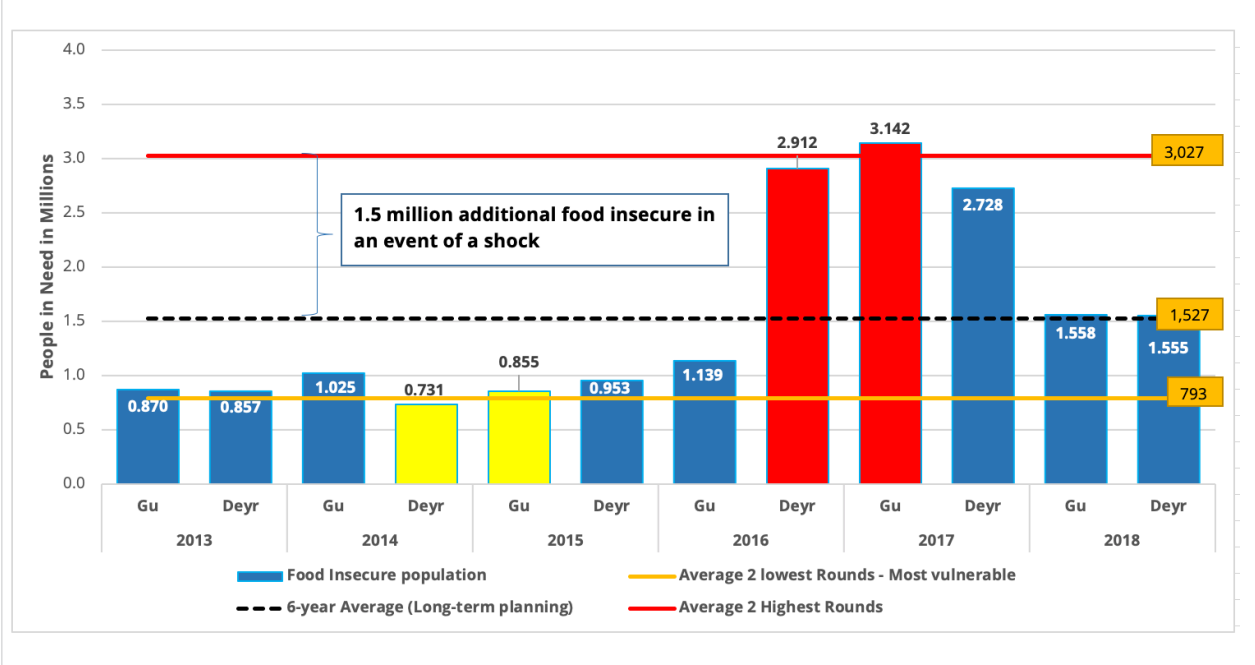


Figure 3 provides an overall estimate for long-term planning. The number of severely food insecure people (IPC Phase 3 and above) from 2013 to 2018 ranged between 731,000 and 3.14 million. The overall average of the 14 seasons (*gu* and *deyr*) is 1,535,000 people[11], which reflects either the number of people who are consistently or recurringly food insecure or people who have experienced food insecurity at some point because of a specific natural shock or a negative event.

Figure 3: Number of severely food insecure people by season



11 The figures are average of long-term trend for planning and programme design. Hence, not official statistics.

The average of the two lowest figures (793,000) provides an estimate of the population that is consistently food insecure, irrespective of the seasonal performance. It signals the population that is most vulnerable to food insecurity and should be targeted with safety nets to provide predictable support, meet food and nutrition needs and at the same time build resilience. The difference between the average of the highest two and the overall average (1,500,000) shows the estimated number of additional people at risk (acutely food insecure), should a shock event occur. This is the population that should be targeted with resilience building livelihood interventions to ensure that they are able to withstand shocks.

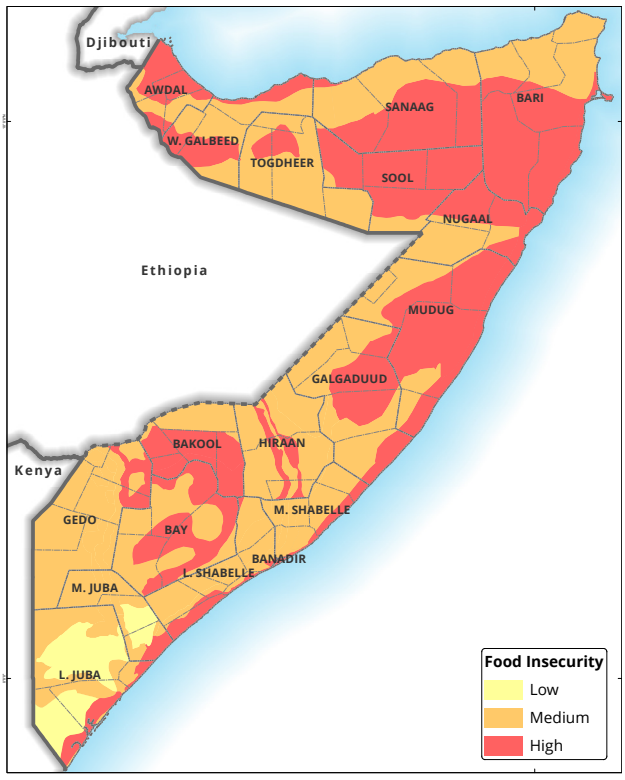
During the years 2013 and 2018, on seasonal basis, the overall average of food insecure people during *gu* was 1,432,000 and 1,623,000 during *deyr*. The additional number at risk (acutely food insecure) in the event of a shock was 919,000 during *gu* and 1,197,000 during *deyr*.

2.1.2 Geographic distribution of food insecurity

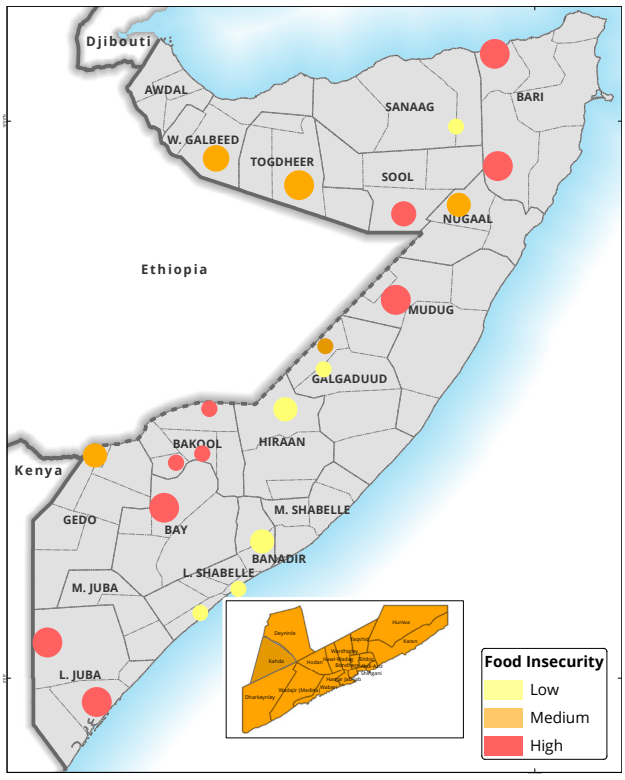
Food insecurity has been a major cause for concern in several areas of Somalia in past years. Seasonal trends (Annex I) show high levels of food insecurity which peaked in 2011 following the major drought that affected the Greater Horn of Africa leading to famine conditions in parts of Somalia. The situation then improved from 2012 only to significantly deteriorate again in 2017 because of consecutive poor seasons associated with climate variability and change.

A combination of IPC phase and proportion of population (rural and IDPs) affected for the period 2012–2017 revealed high levels of food insecurity in Northern Inland Pastoral (in Bari, Sool and Sanaag regions), Guban Pastoral (in Awdal and Wogooyi Galbeed regions), Northwest Agropastoral (W. Galbeed and Awdal regions), Coastal Dheeh Pastoral and Fishing (in Bari, Nugaal, Mudug and Middle Shabelle regions as well as Galmudug state), Addun Pastoral (in Mudug and Galgaduud regions), Southern Rainfed Agropastoral (in Middle Shabelle, Lower Juba and Middle Juba regions) and Togdheer Agropastoral (in Togdheer region) livelihood zones while the rest of the country was under medium or low level as shown in Map 2. Similarly, high levels of food insecurity were noted among IDPs in Bari, Mudug, Sool, Bay, Lower Juba and Bakool regions (Map 3).

Map 2: Food insecurity for rural population



Map 3: Food insecurity for IDP population



2.1.3 Seasonal food security trends

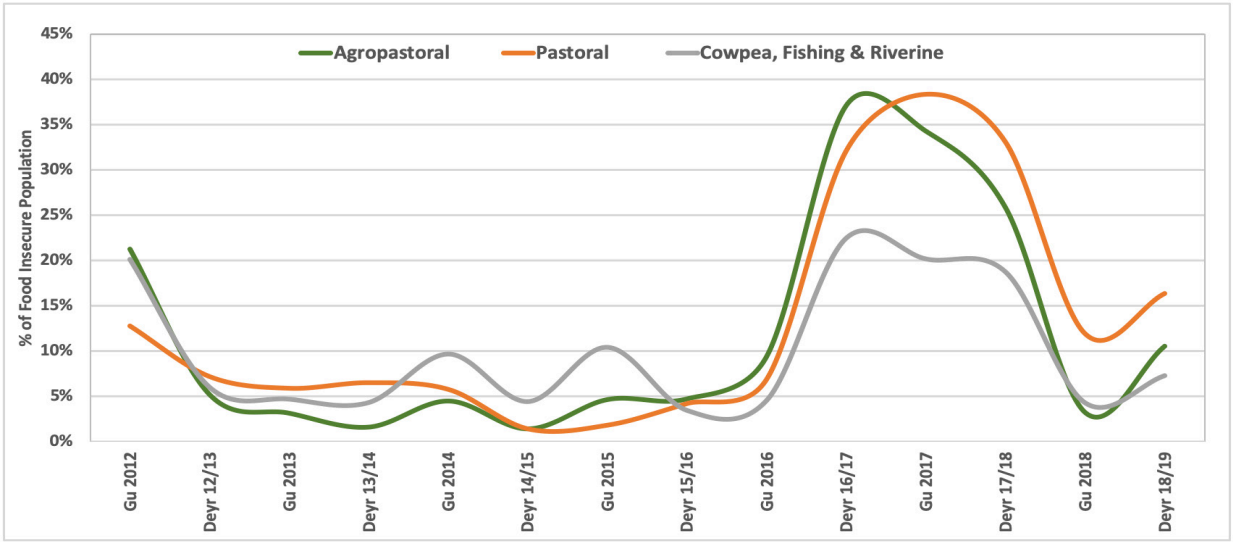
Seasonality, based on the seasonal calendar generated by FEWSNET, shows that the *gu* rains occur between April and June and *deyr* rains occur between October and December. Most activities revolve around these two rainy seasons with agricultural activities taking place from March to July (during *gu*) and from September to January (during *deyr*).

In the pastoral and agropastoral areas, climatic conditions influence the various activities undertaken during the year, including the migration of livestock from dry to wet season grazing areas. Food security deteriorates during the lean seasons between February and April for pastoral livelihoods and between mid-April and June/July for agropastoral-based livelihoods.

Seasonality in climatic conditions plays a role in influencing food insecurity through agricultural food production and availability of pastures for livestock—the two main livelihood sources for most populations. The proportion of population experiencing severe food insecurity among the three groupings (pastoral, agropastoral, riverine and special groups) reveal a similar pattern from *gu* 2012 to *deyr* 2018 but with increased vulnerability in 2016 and 2017 due to effects of consecutive poor seasons (Figure 4).

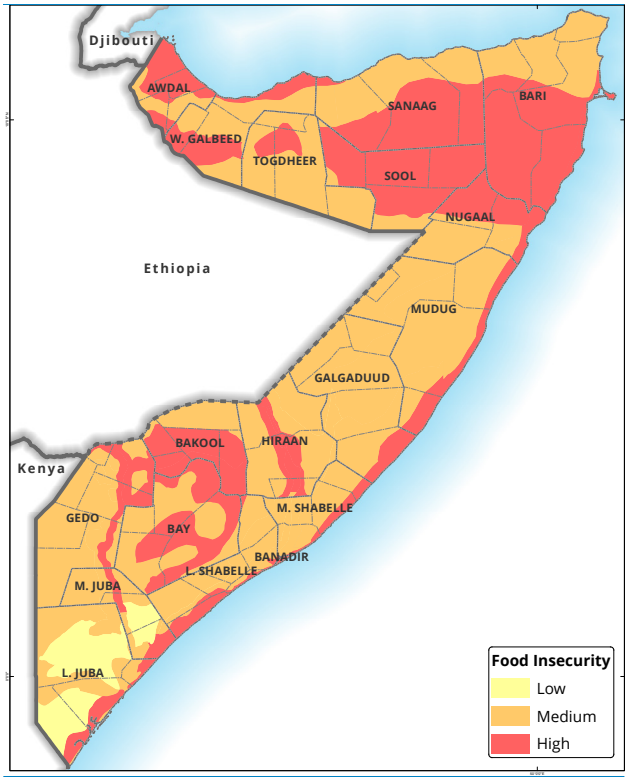
During periods of favourable climatic seasons, as experienced from 2013 to early 2015 and at the end of 2017, the agropastoral livelihoods performed relatively better than pastoral livelihoods probably due to own food production. However, during poor climatic seasons as in 2016 and early 2017 the proportion of food insecure population remains higher than the other groupings. This provides insight on periods where support to specific livelihood groupings may be needed to minimise effects of seasonal shocks.

Figure 4: Food insecurity over time by main livelihood category

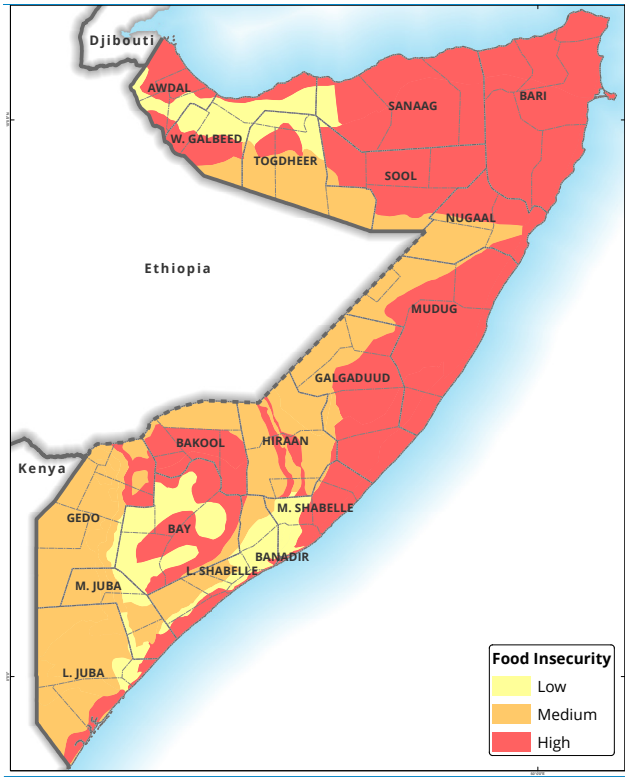


Following the mapping of the results of the analysis for each livelihood zone, the following livelihood zones are indicated at being high risk for food insecurity during the *gu* (Map 4): Bay-Bakool Low Potential Agropastoral, Guban Pastoral, Togdheer Agropastoral, Northwest Agropastoral and Coastal Deeh. In addition to these, during *deyr* (Map 5), Northern Inland Pastoral, Addun Pastoral, Cowpea Agropastoral, Riverine Pump Irrigation and Southern Inland Pastoral of Bakool region are identified at being high risk for food insecurity, except for the Bay-Bakool Low Potential Agropastoral livelihood zone.

Map 4: Food insecurity by IPC phase classification (*Gu*)



Map 5: Food insecurity by IPC phase classification (*Deyr*)



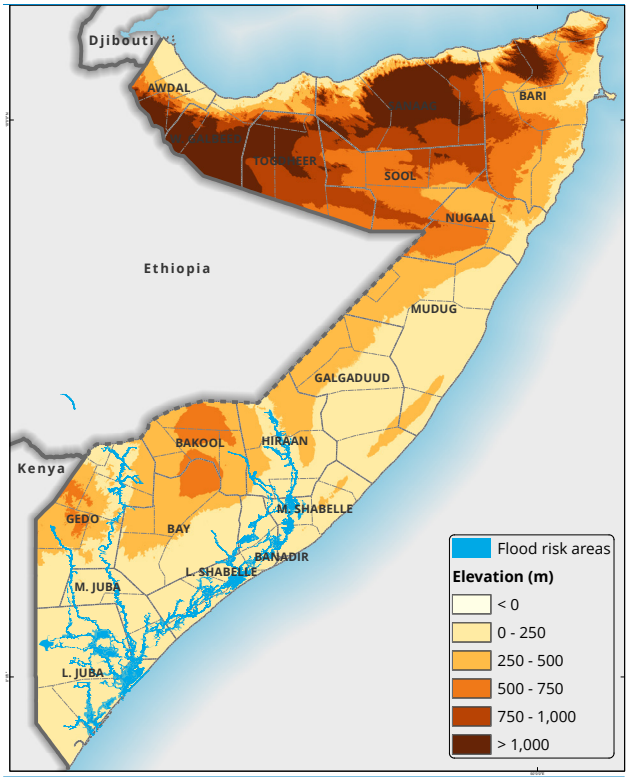
2.2 Natural shocks and land degradation

Floods and droughts are the main natural shocks that affect many areas of Somalia. Land degradation resulting from the effects of recurrent droughts in combination with anthropogenic activities is also of concern in several livelihood zones. The following sections provide the results of the analysis.

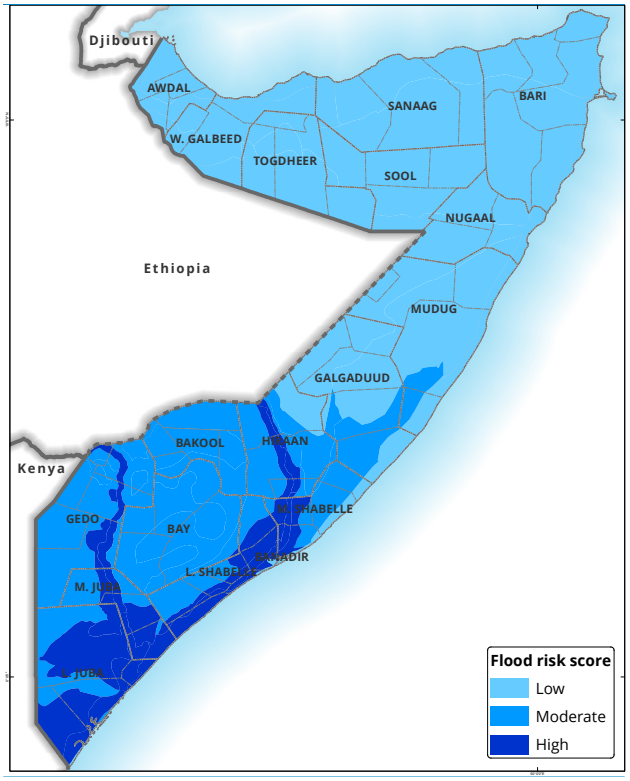
2.2.1 Floods risk

The 2002–2006 flood information provided by FAO SWALIM shows that the main flood risk areas are in the southern region along the Juba and Shabelle river basins (Map 6). These are among the lowest lying areas of Somalia where water in the Juba and Shebelle rivers from Ethiopian highlands and local rainfall accumulates, sometimes breaking the riverbanks and causing widespread flooding. Hence, the most flood risk areas lie along the two rivers and downstream where they converge before reaching the Indian ocean (Map 7). Most other areas of the country, especially in central and northern regions, are less vulnerable to river flooding although these regions experience flash floods at times.

Map 6: Flood risk areas in Somalia



Map 7: Levels of flood risk by livelihood zone



2.2.2 Droughts (meteorological and agricultural)

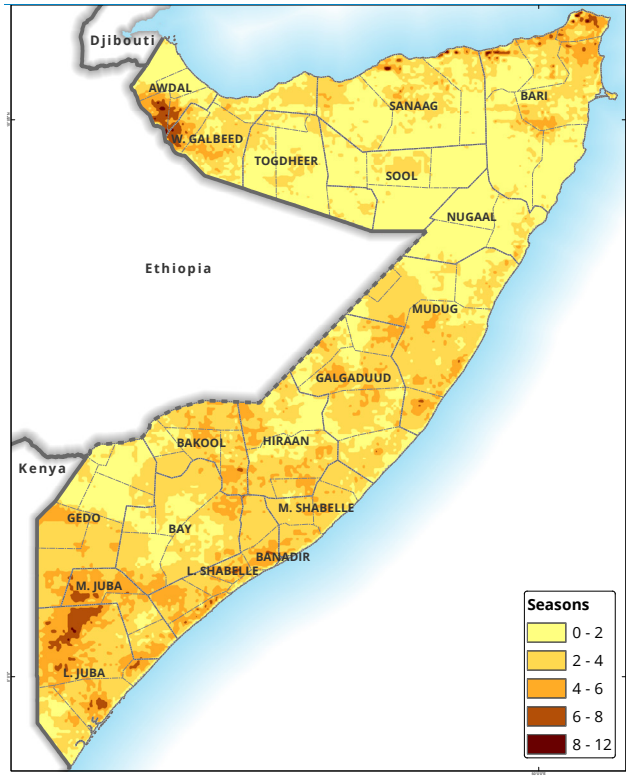
Drought conditions are more widespread compared to floods and are a result of insufficient and unreliable rainfall. The droughts normally result in failed crop harvests, inadequate water and pastures for livestock, and lead to forced migration of people and livestock in search of water, pastures and forages. In severe cases this also results in loss of human and livestock lives. The 2010/2011 drought was one of the most devastating as it caused massive casualties and human displacement. About 260,000 human lives, mostly children, were lost.[12] Equally, the 2016–2017 was a devastating period given successive poor seasons that culminated in a severe drought in 2017 and affected nearly the entire country. Occasionally, some areas in the northern region do experience localised droughts due to insufficient rains.

12 **UN News**. Somalia famine killed nearly 260,000 people, half of them children – repots UN. 2 May 2013. https://news.un.org/en/story/2013/05/438682-somalia-famine-killed-nearly-260000-people-half-them-children-reports-un

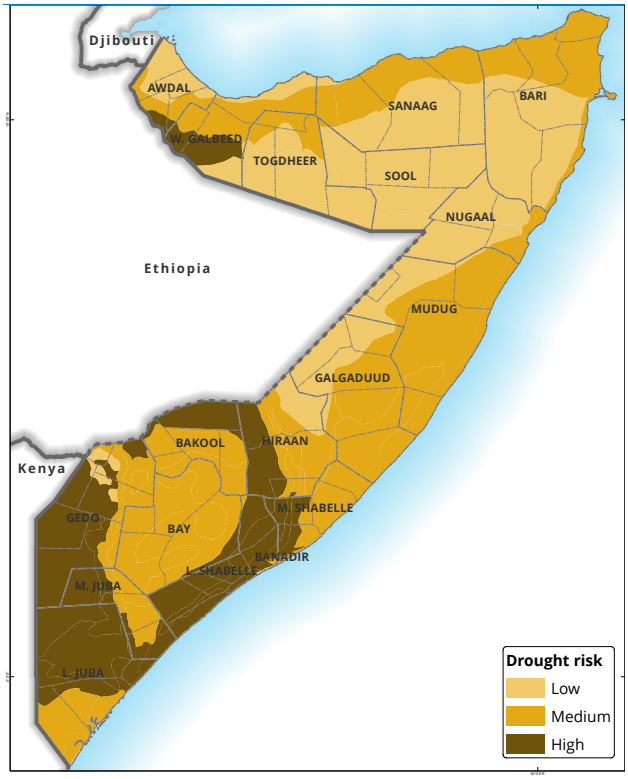
The results of the meteorological droughts analyses over the last 20 years during April and June and from October to December show that several seasons were affected as outlined in the time series of SPI maps in Annex III. The frequency of moderate to severe meteorological droughts varied across the country as shown in Map 8, with most areas in south, central, northeastern and parts of northwest having experienced several drought conditions during that period. The least affected livelihood zones are the Northern Inland Pastoral, parts of Hawd Pastoral, Guban Pastoral and isolated areas in south with up to two drought conditions.

Aggregation of the information by livelihood zones shows that most areas are under medium and high levels of meteorological drought risks (Map 9) except the Northern Inland Pastoral, Guban Pastoral, Hawd Pastoral and part of Southern Inland Pastoral in Gedo region.

Map 8: Frequency of meteorological droughts 1998–2017



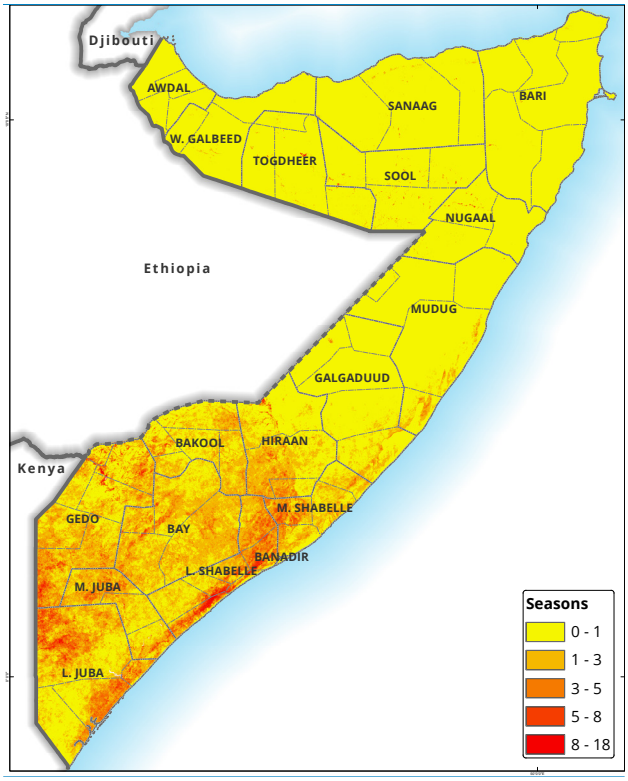
Map 9: Meteorological drought status by livelihood 1998–2017



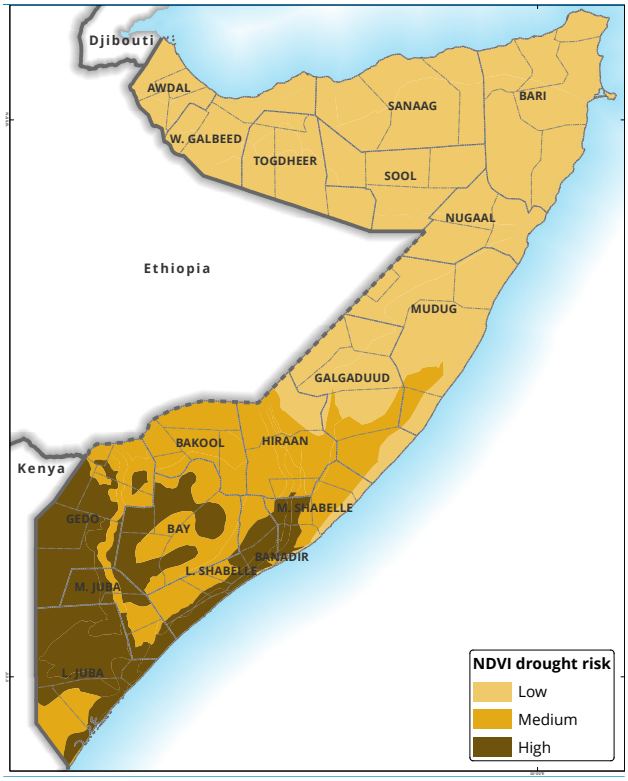
Agricultural droughts over the 2001–2017 period on the other hand show relatively high frequency of occurrence in southern areas compared to the rest of the country (Map 10). The most affected areas lie along the riverine basins where agriculture is normally practiced, signalling possible incidences of poor or failed cropping seasons and pastoral areas near the Kenyan border. The most affected livelihood zones are Southern Inland Pastoral, Riverine Irrigation and Sorghum High Potential Agropastoral (Map 11). Discussions however revealed that some of the areas in the south have also been affected through unsustainable land uses, such as charcoal production and overgrazing, leading to poor vegetation conditions when compared with the 17-years average.

The combined meteorological and agricultural droughts show that the southern areas face a high drought risk compared to the rest of the country (Map 12). This is specifically sensitive given that it comprises the main fertile areas of the country, and negative impacts of droughts pose threat to food security. It also poses great risk to livestock production in agropastoral and pastoral zones. Details on the seasonal drought performance are provided in a later section on seasonality.

Map 10: Frequency of poor growing seasons over 2001–2017 period



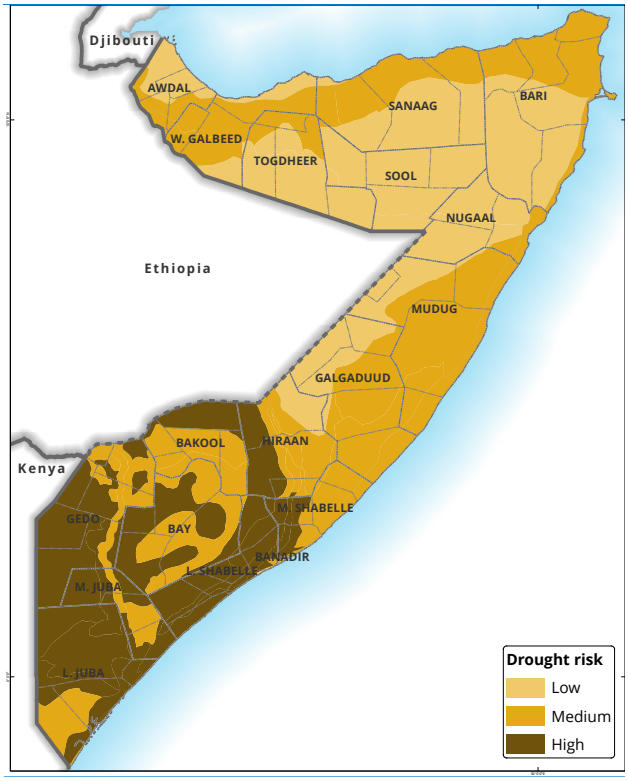
Map 11: Agricultural drought by livelihood zone over 2001–2017 period



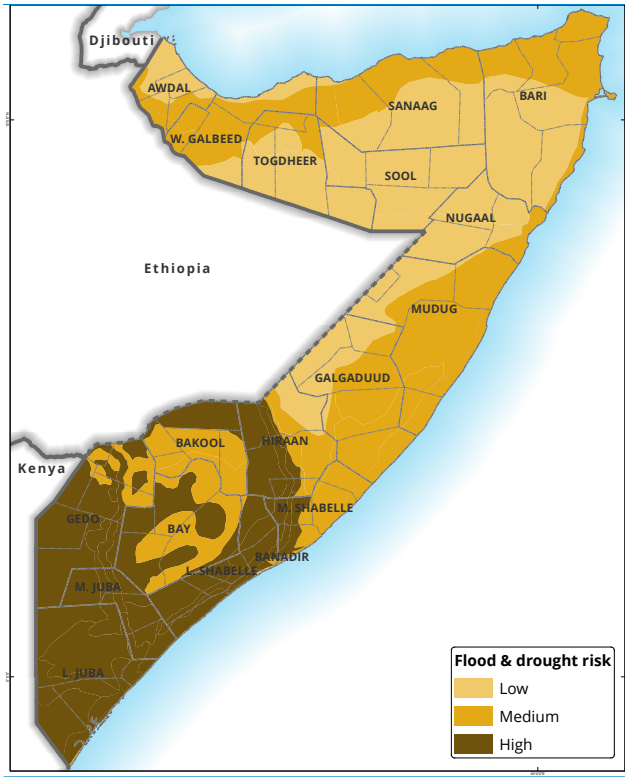
2.2.3 Combined floods and droughts natural shocks risks

The combined results of natural shocks (Map 13) indicate that livelihood areas along the two main river basins (Shabelle and Juba), Southern Inland Pastoral, Sorghum High Potential zone, Southern Rainfed Agropastoral and parts of Southern Agropastoral are at higher risks of flooding and droughts. Areas of medium risk include the East and West Golis Pastoral zones in the north, Addun Pastoral and Cowpea Belt zones in central, Bay-Bakool Low Potential Agropastoral and Juba Pastoral zones. The relatively low risk in the Hawd and Northern Inland Pastoral zones can be attributed to the fact that they are less affected by floods and drought conditions (both the meteorological and agricultural).

Map 12: Combined meteorological and agricultural drought risk



Map 13: Combined floods and droughts shock risk score

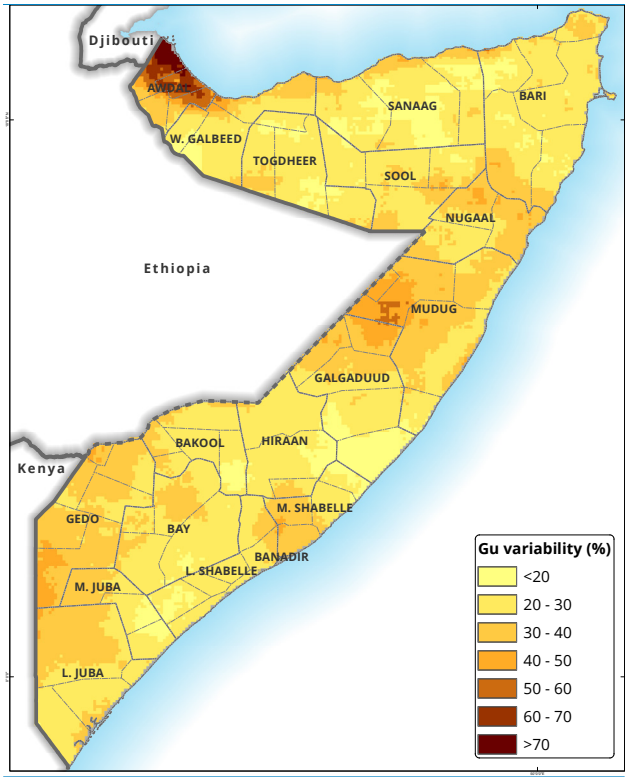


2.2.4 Seasonality in meteorological and agricultural droughts

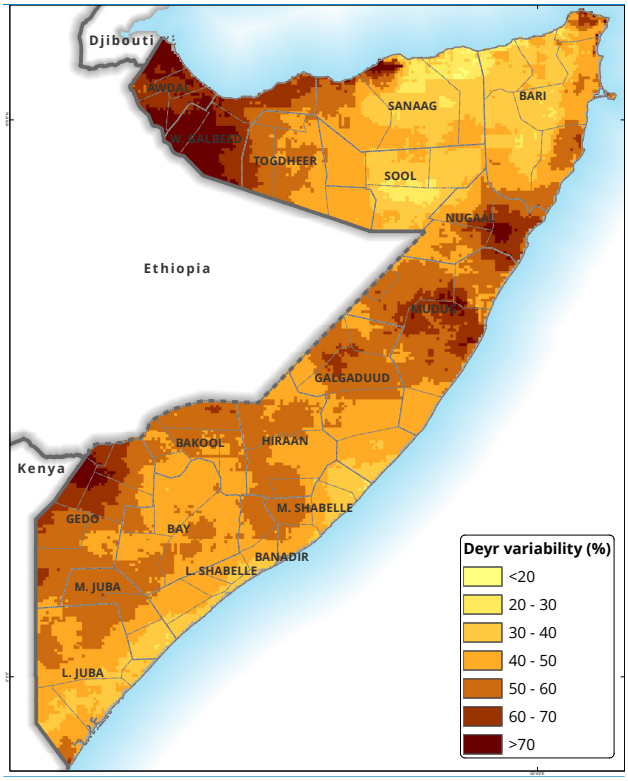
High variability in rainfall during *gu* is experienced only in Guban Pastoral livelihood zone (Map 14) but a greater variability in rainfall is witnessed during the *deyr* season (Map 15). Hence, the performance and reliability of rainfall to support livelihoods is more at risk during the *deyr* season. For livelihood zones, refer to annex IV.

Results further show high inter-annual variability in growing conditions in the south than in the rest of the country, which is pronounced during *deyr* (Maps 16 and 17). The high variability in growing conditions in the south suggests seasonal fluctuation in crop production and availability of pastures and browse.

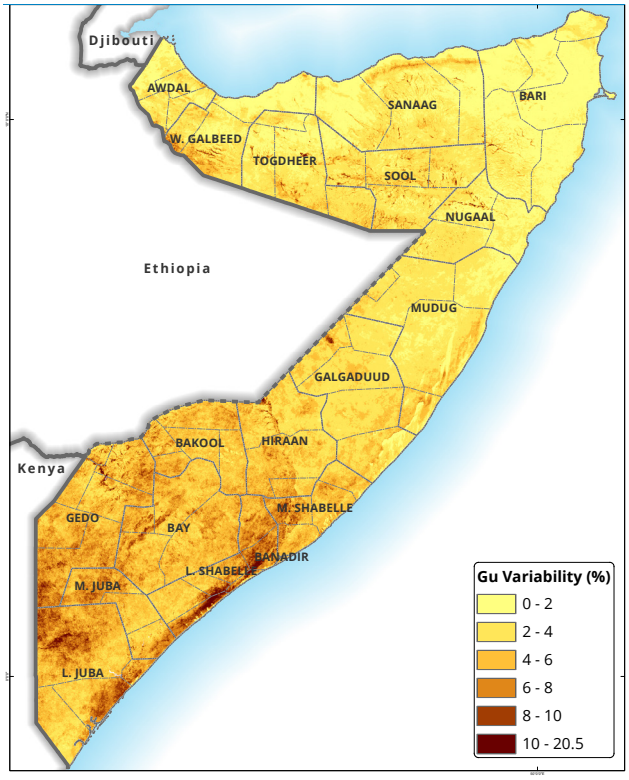
Map 14: Inter-annual rainfall variability during the *gu* 1998–2017



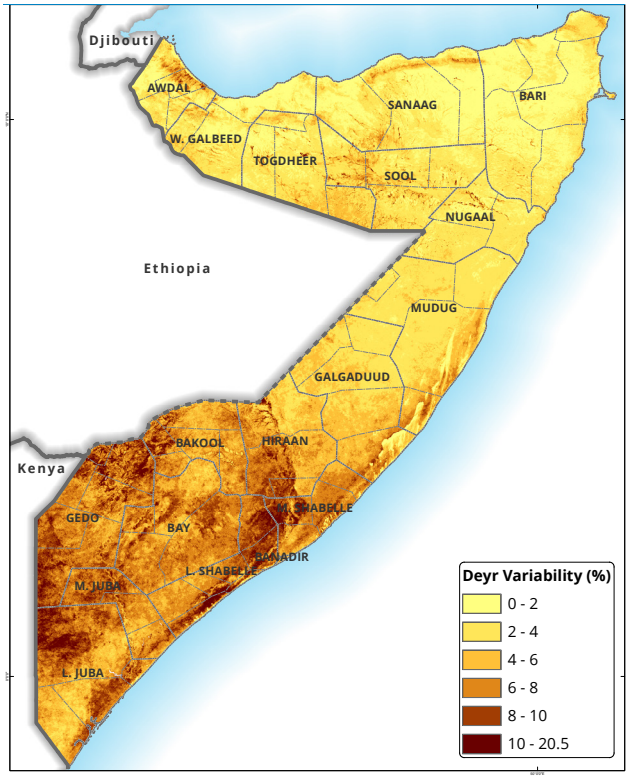
Map 15: Inter-annual rainfall variability during the *deyr* 1998–2017



Map 16: Inter-annual variability of vegetation growth during *gu* 2001–2017



Map 17: Inter-annual variability of vegetation growth during *deyr* 2001–2017



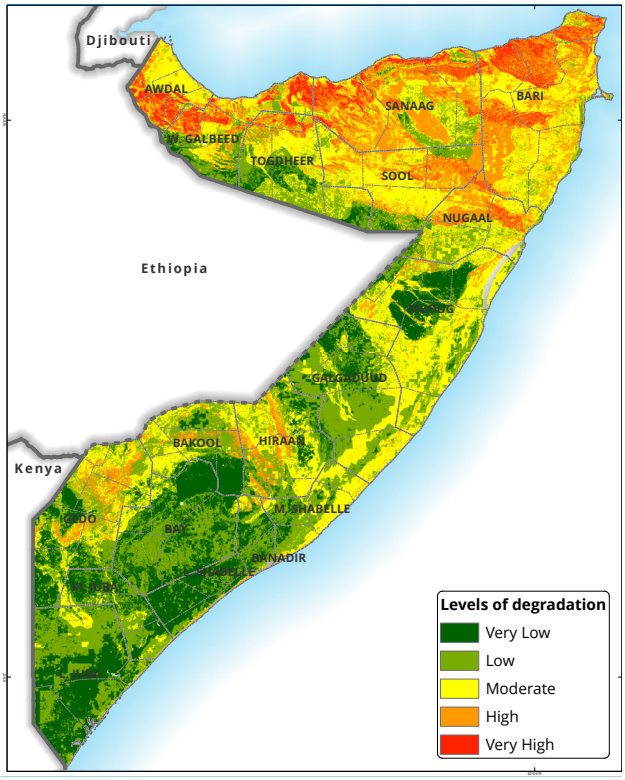
2.2.5 Land degradation

The status of the natural environment can magnify the impact of shocks. When land is heavily degraded and is no longer protected because of loss of vegetation cover, soil is laid bare and thereby becomes unable to withstand the natural elements of rain, wind and temperatures, and hence can easily be eroded. These elements lead to cyclic and destructive effects that make land extremely fragile and unable to withstand even normal climatic patterns. Given that people draw on natural environments for their livelihoods and to cope during times of crisis, poor land practices and unsustainable use of environmental resources further aggravates land degradation and increases risk of natural shocks.

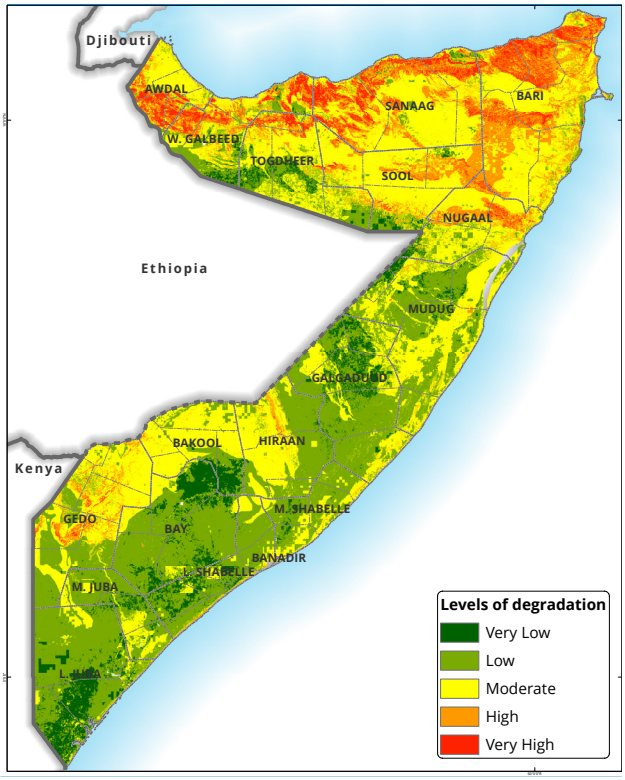
In Somalia, land degradation is a key environmental issue. An assessment by FAO SWALIM in 2009 identified three main types of land degradation in Somalia—loss of vegetation, loss of topsoil, and decline in soil moisture and fertility. Land degradation is closely linked to desertification, drought and unsustainable land use practices (such as livestock overgrazing, deforestation for fuel wood and charcoal production, and poor agricultural practices[13]).

Seasonal products by Regional Centre for Mapping of Resources for Development (RCMRD) and Monitoring of the Environment for Security in Africa (MESA) from 2010 to 2014 showed high to very high land degradation in the northern parts of the country (Map 18). The implication of such degradation is that it affects land resource productivity, which in turn compromises livestock production. This in turn increases vulnerability among populations depending on affected areas.

Map 18: Seasonal status of land degradation, 2005–2014

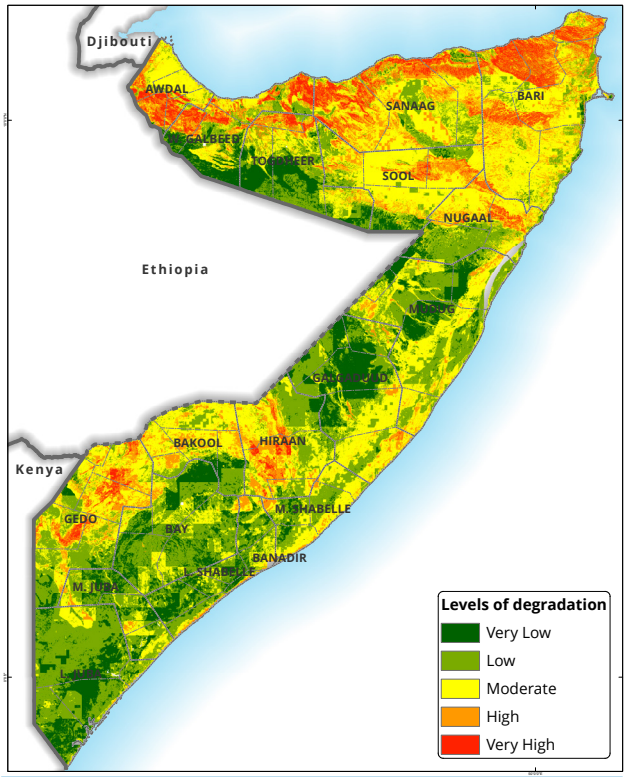


April–August 2010

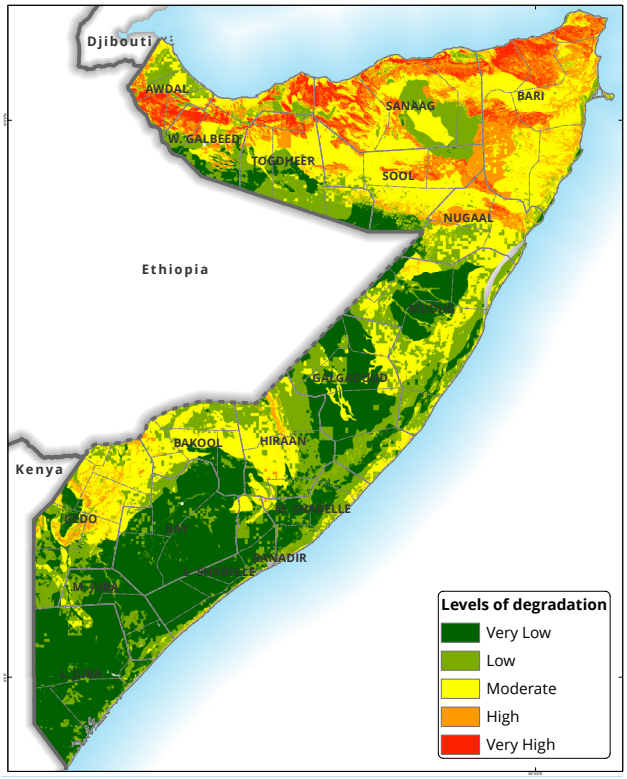


April–August 2011

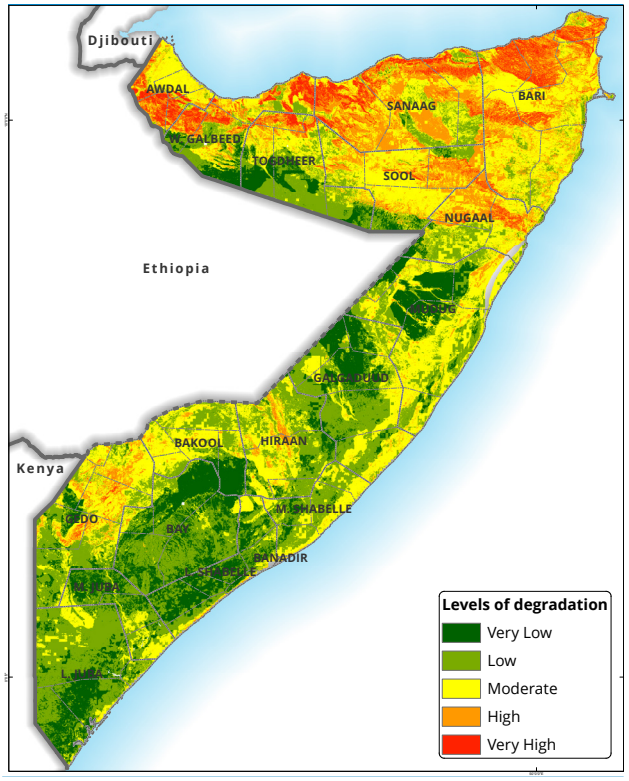
13 http://www.faoswalim.org/land/land-degradation



October 2011–March 2012



April–August 2012



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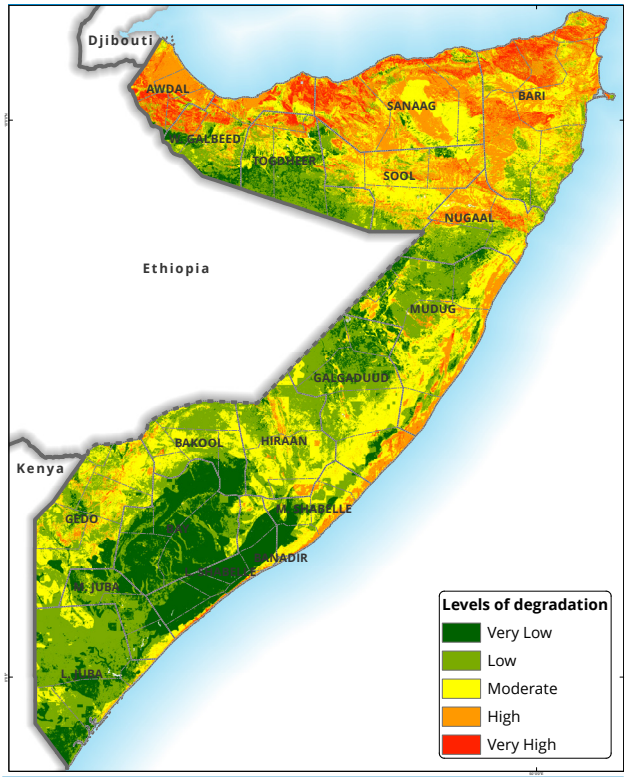
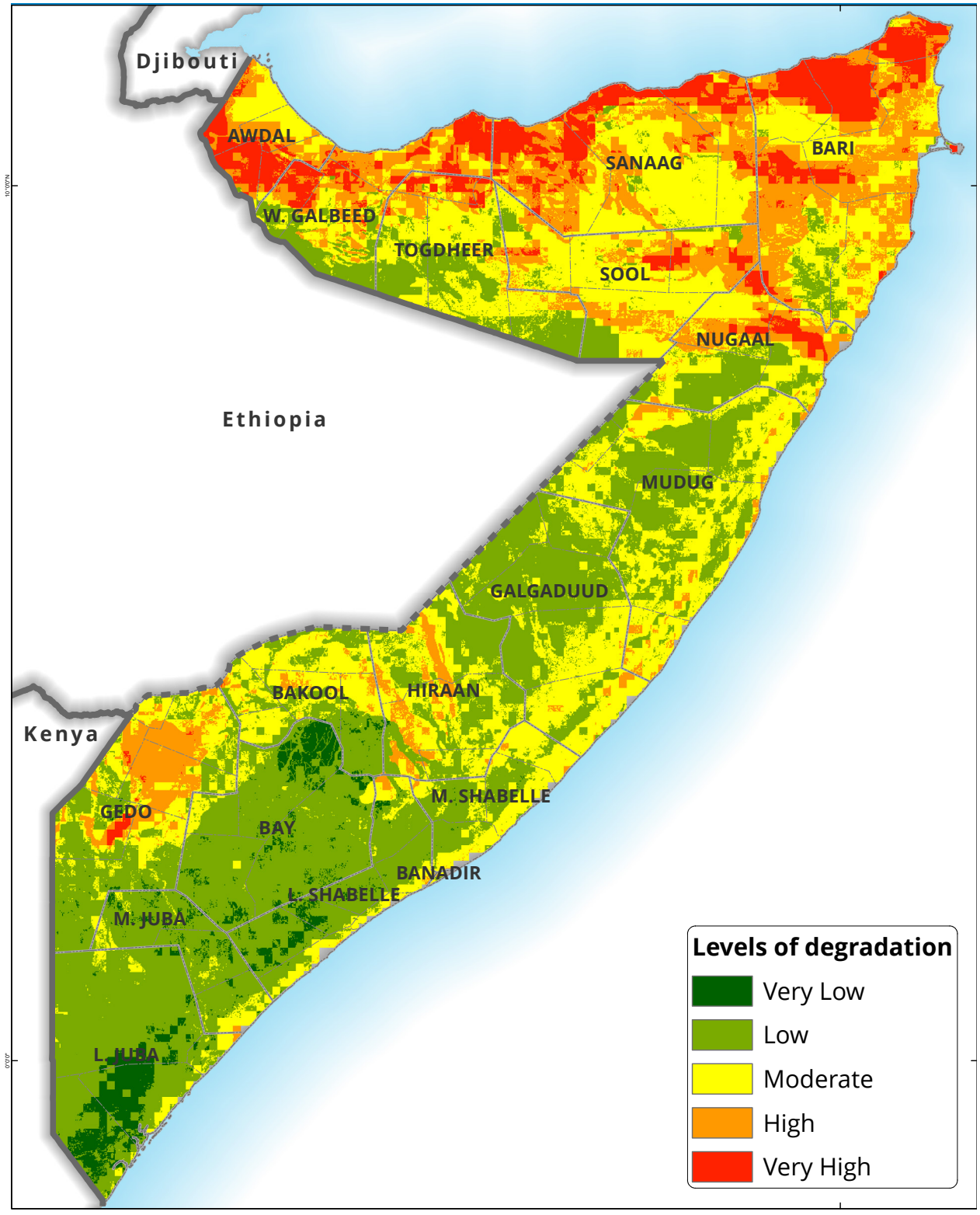


October 2014–March 2015

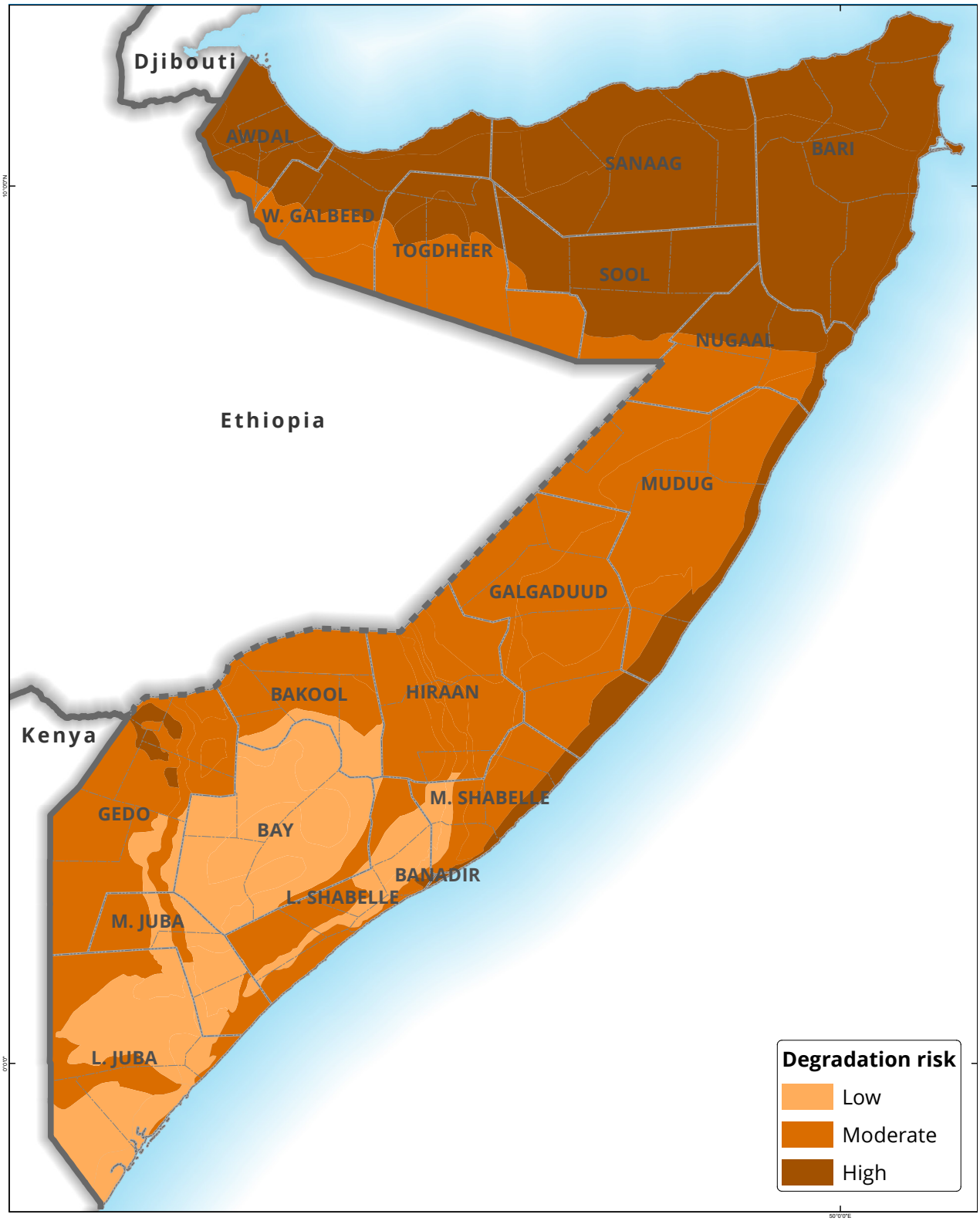
The generated average product over the 2010–2014 period revealed high degradation in northern areas while large areas in central, northern and parts of southern region were identified under moderate degradation (Map 19).

Map 19: Average seasonal land degradation over the 2010–2014 period



The combined severity and proportion of surface area affected by degradation by livelihood zone show that Guban Pastoral, West and East Golis, Northern Inland Pastoral and Coastal Dheeh Pastoral and Fishing livelihoods have higher risk of land degradation (Map 20). The northern region is relatively hilly and subject to soil erosion.

Map 20: Land degradation risk based on severity and proportion of surface area affected

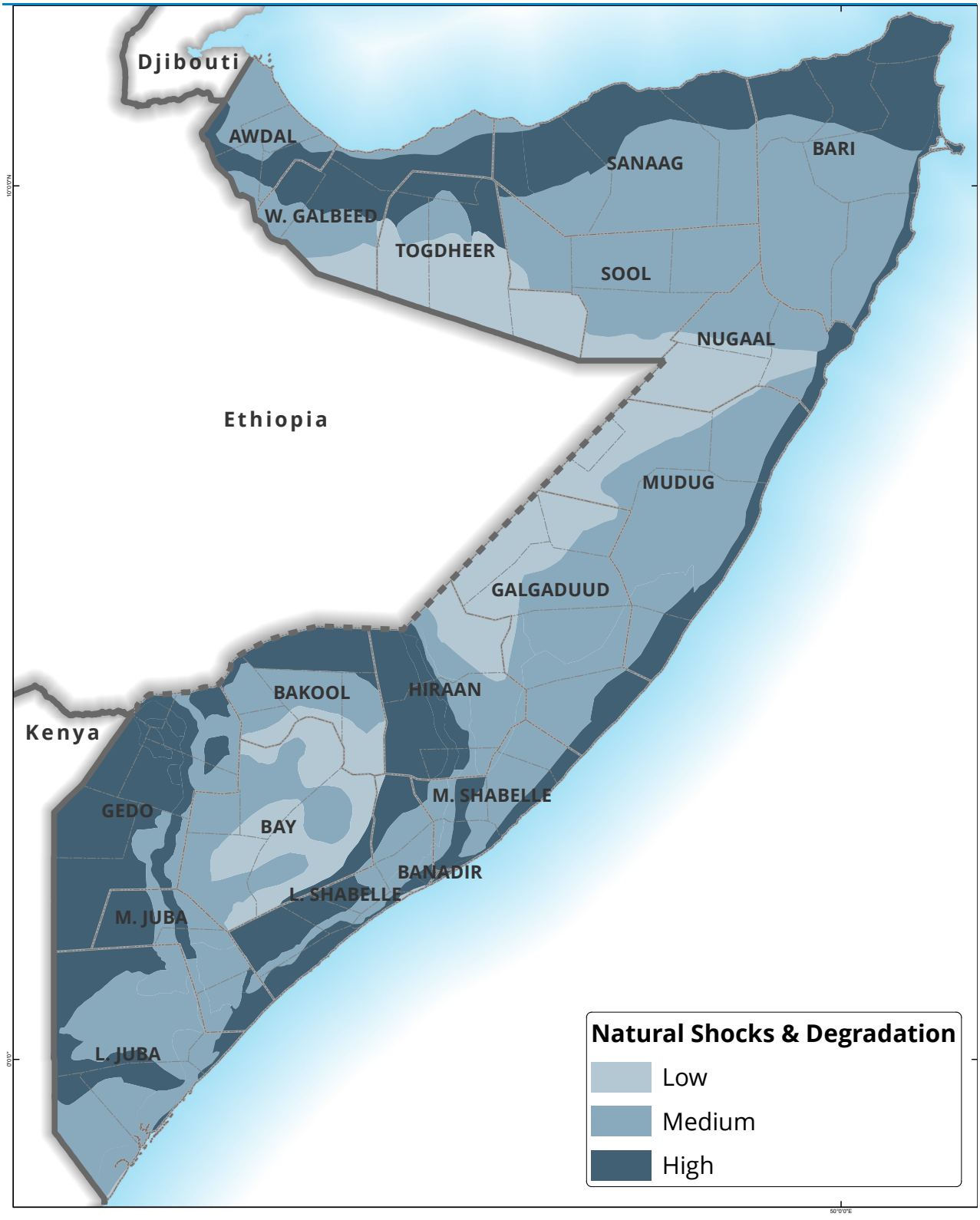


In comparison, the southern areas especially in Bay, Lower Juba, parts of Shabelle river basin and parts of Southern Agropastoral livelihoods experienced the least degradation. It should however be noted that in recent years there have been reports of heightened charcoal production in parts of the south that may have significantly altered the situation. Interventions to promote environmental management and sustainability are required, such as the use of alternate energy sources, alternate income generation sources and awareness creation of the same.

2.2.6 Combined natural (floods and droughts) and land degradation risks

The greater part of the country faces moderate to high risk of both natural hazards and land degradation. This is especially in areas along the Shabelle river basin, the coastal strip in the Coastal Dheeh Pastoral and Fishing zone, East and West Golis zones, Southern Rainfed Agropastoral and Southern Inland pastoral (Map 21).

Map 21: Combined shock risk score for Somalia



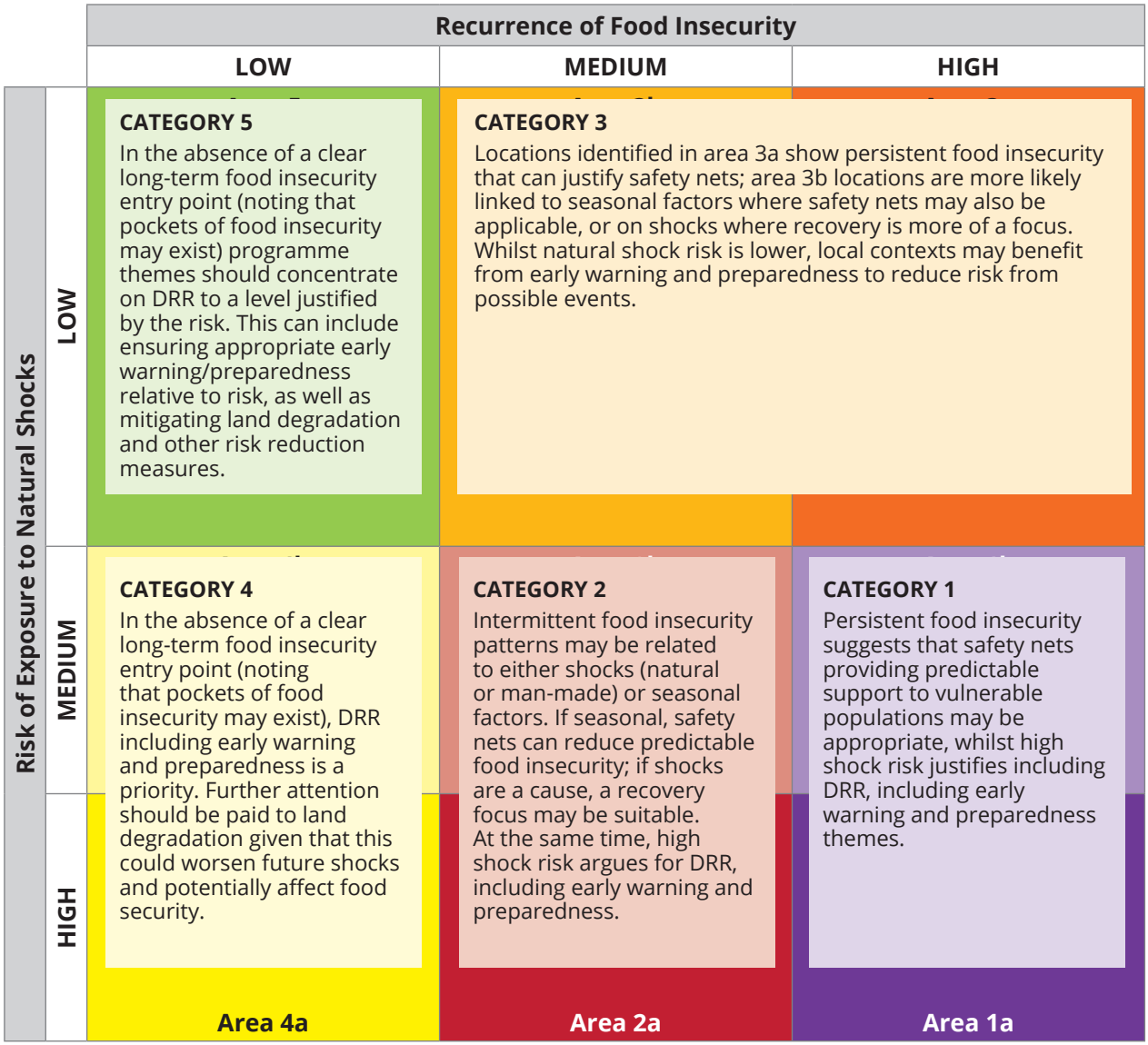
The above-mentioned livelihood zones require attention to minimise vulnerability and enhance resilience to shocks among the populations.

The analysis shows that only the Hawd Pastoral and Bay-Bakool Low Potential Agropastoral zones have relatively low risk of combined effects of floods, droughts and land degradation. Focus should be on strengthening early warning and preparedness measures and on building resilience.

2.3 ICA areas and ICA categories

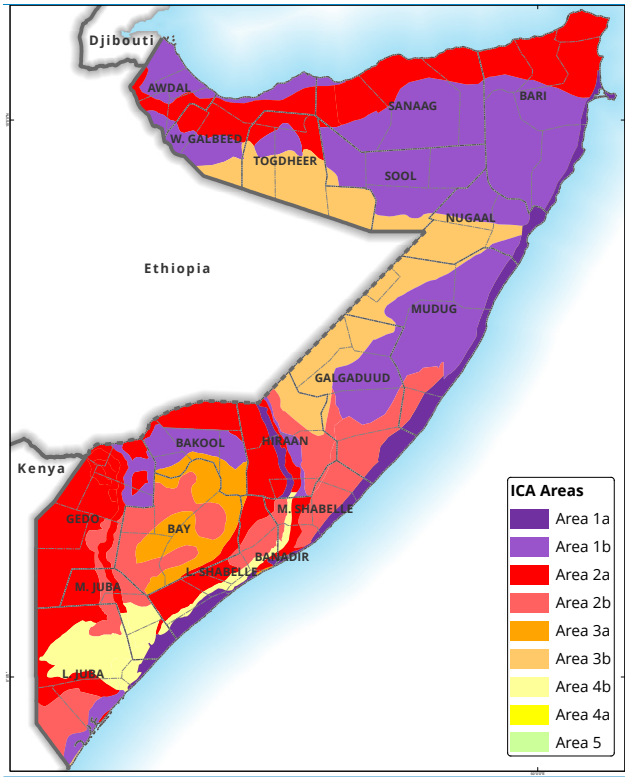
The ICA for Somalia categorises the country's livelihood zones into categories 1 to 3 (category 1 capturing the most severe levels of risk) based on livelihood zones' levels of recurring food insecurity and exposure to natural shocks and land degradation. No zones were classified under categories 4 and 5 (Figure 5).

Figure 5: ICA categories and areas

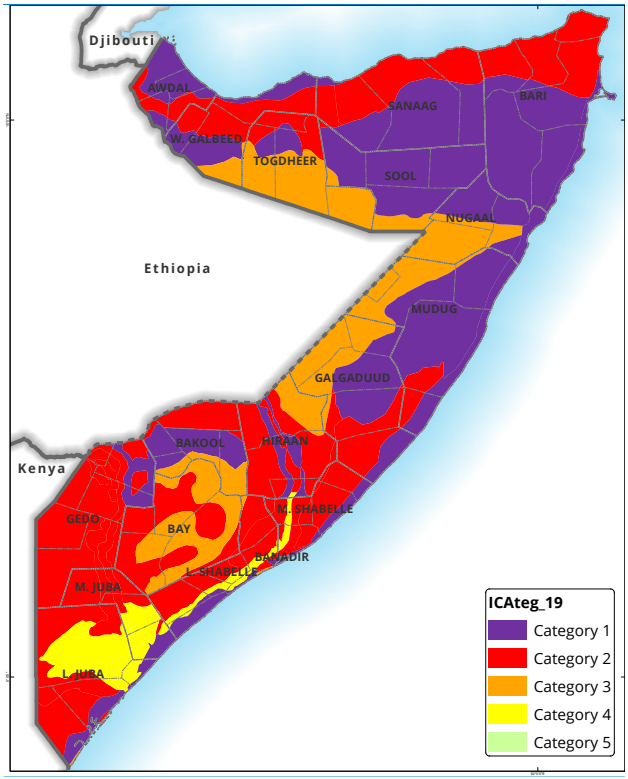


Maps 22 and 23 on ICA areas and categories, respectively, show that the most severe areas comprise the Guban Pastoral, Northern Inland Pastoral, Southern Rainfed Agropastoral, Northwest Agropastoral, Togdheer Agropastoral and Southern Rainfed Agropastoral all under ICA areas 1a and 1b. Populations in these areas remain vulnerable to food insecurity over relatively longer periods when affected by climatic shocks either it takes several seasons to rebuild livestock herds once affected by a shock or rebuilding their livelihoods. The agropastoral and agricultural areas in the south, though subject to effects of floods and droughts, are in ICA areas 2a and 2b, which can be attributed to own food production and availability of grazing resources.

Map 22: ICA focus areas by livelihood zones



Map 23: ICA categories by livelihood zones



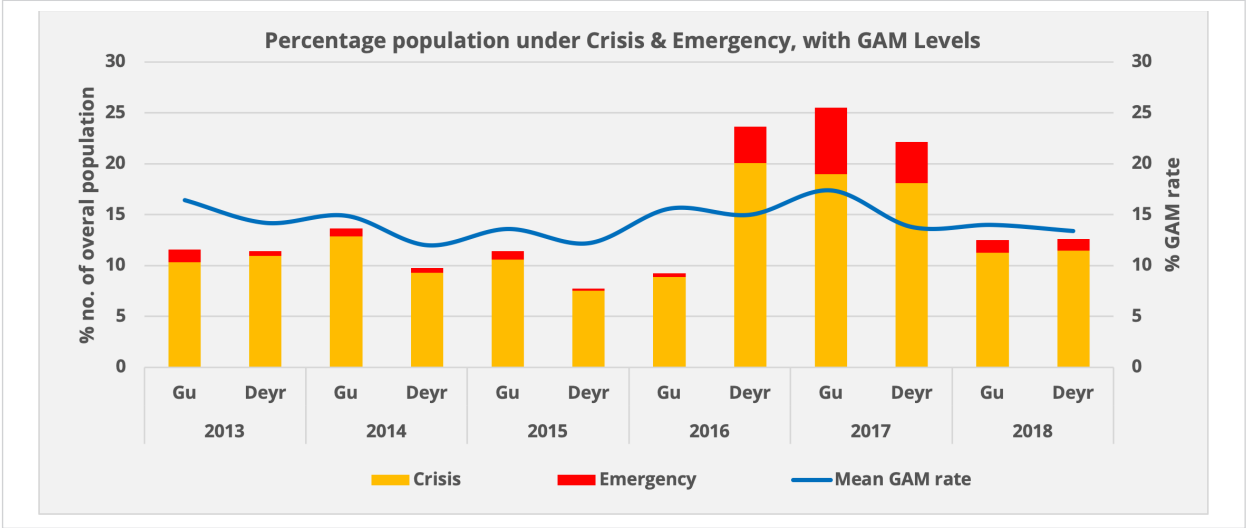
2.4 Core ICA lenses[14]

2.4.1 Nutrition

At the macro level, nutrition outcome (GAM) appears to respond in a pattern similar to the proportion of population under severe food insecurity (Figure 6). Considering national GAM prevalence rates, the drought of 2011 had the highest GAM levels with a median of 30 percent and this has since decreased to below the critical threshold of 15 percent in 2014 and 2015. Despite the drought of 2016 and 2017, the GAM levels did not increase to the 2011 levels.

14 Seasonality Core ICA lens is included under section 2.1 Food security and 2.2 Natural shocks and Land degradation

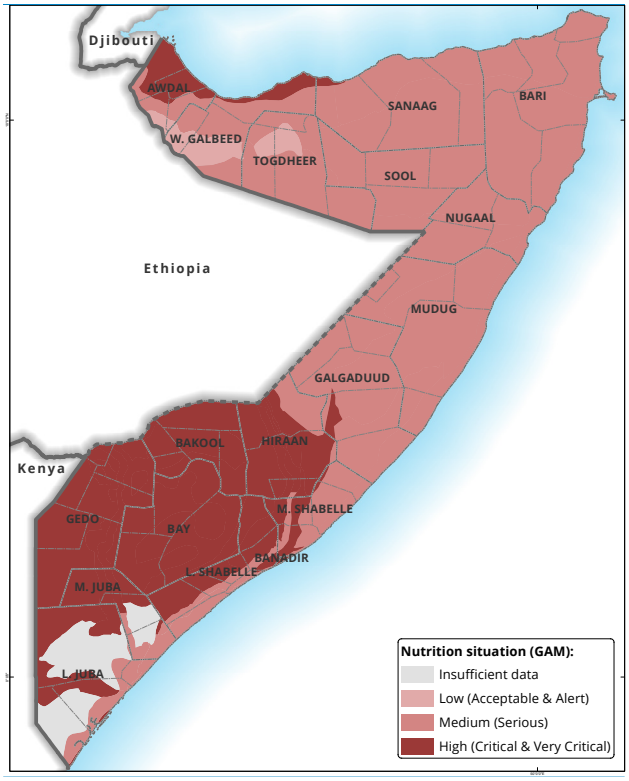
Figure 6: Proportion of population under severe food insecurity and under malnutrition



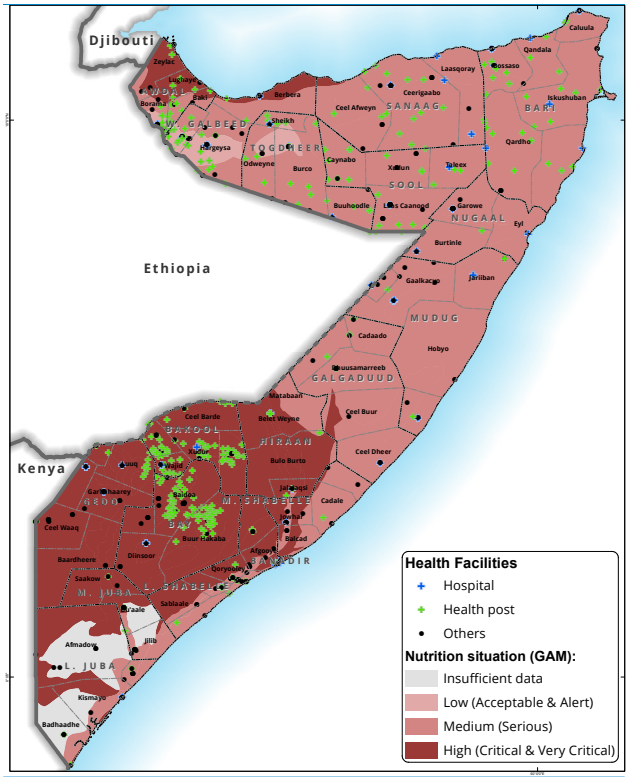
The above could be explained by the fact that food insecurity may not be the only contributor to high malnutrition but rather an inter-play of different structural causes. However, severe food security shocks have a compounding effect on the nutrition situation due to the synergistic relationship between food insecurity, health and care. Worsening food insecurity conditions not only influence dietary patterns but also influence the social and care environment and access to basic services.

GAM levels have varied across areas with some showing critical and serious levels between the years 2013 and 2018 (Annex II). The combined phase classification and frequency of GAM above critical levels (>15 percent) over the 2012–2018 period reveal high risk in the southern areas in the livelihood zones of Southern Inland Pastoral, Sorghum High Potential, Bay-Bakool Low Potential Agropastoral, Riverine Pump Irrigation and Southern Agropastoral (Map 24).

Map 24: ICA nutrition situation per livelihood



Map 25: ICA nutrition situation per livelihood and health facilities



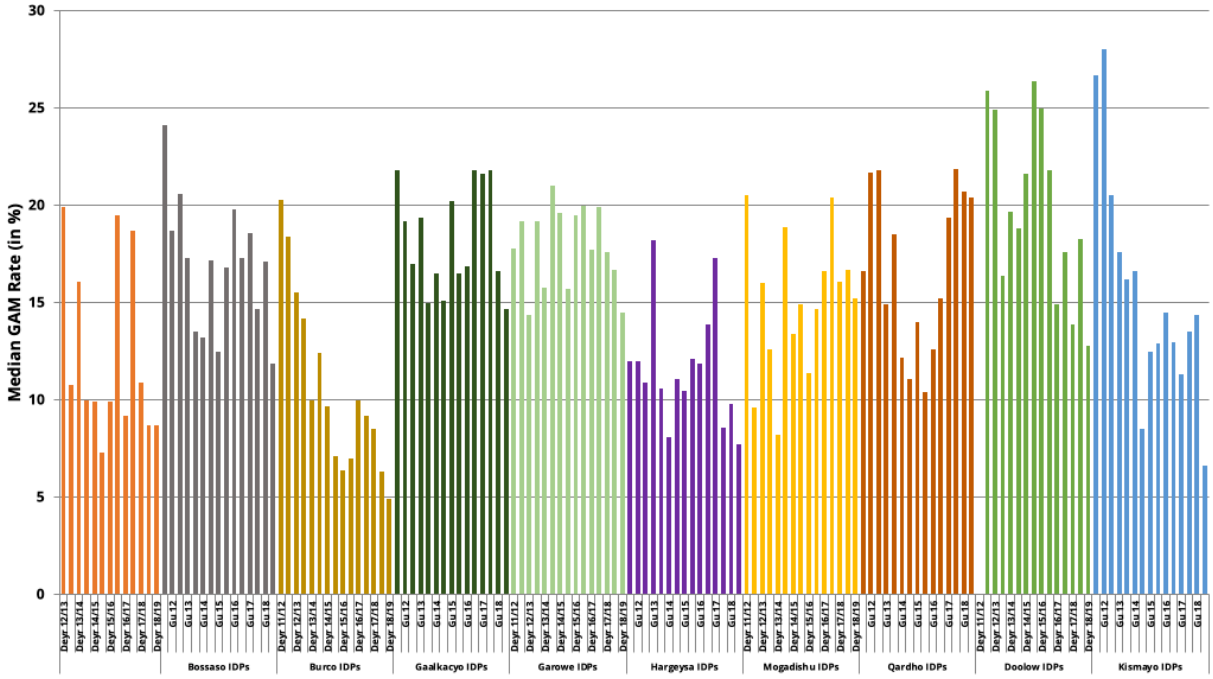
In central and northern areas, only Guban Pastoral Zone was classified under high levels of malnutrition. An overlay of nutrition results with the spatial distribution of health facilities reveals some poorly served areas, especially in the Southern Inland Pastoral, Juba Pastoral, parts of Bay-Bakool Low Potential Agropastoral and Riverine Irrigation zones (Map 25).

2.4.2 Trends in nutrition indicators for Internally Displaced Persons (IDPs)

The frequency of dry spells in the southern farming regions, combined with intensification of conflict over the past years, is associated with the unprecedented levels of population displacement towards the neighbouring countries of Ethiopia and Kenya, as well as to the towns of Mogadishu, Baidoa and Doolow. More so, since the 2015 drought that resulted in widespread rural and-urban displacement of families seeking humanitarian assistance, basic services and livelihood opportunities has led to the ballooning numbers of destitute families. The urban sprawl areas, associated with increasing populations from destitute families and IDPs, are often poorly planned and living conditions are precarious. Frequently, IDPs also suffer from stigmatisation from the host communities, which limits IDP's access to the labour market and to basic services.

Despite significant interventions in provisions for food, health, nutrition and WASH over the past years, the median GAM prevalence in some of the IDP settlements has remained above 14 percent, with exception of Burco (10 percent), Berbera (10.9 percent) and Hargeysa (11.9 percent). Doolow recorded the highest GAM prevalence rate of 20.7 percent followed by Gaalkacyo and Garowe at 19.2 percent (Figure 7).

Figure 7: GAM trends for IDPs 2012–2018



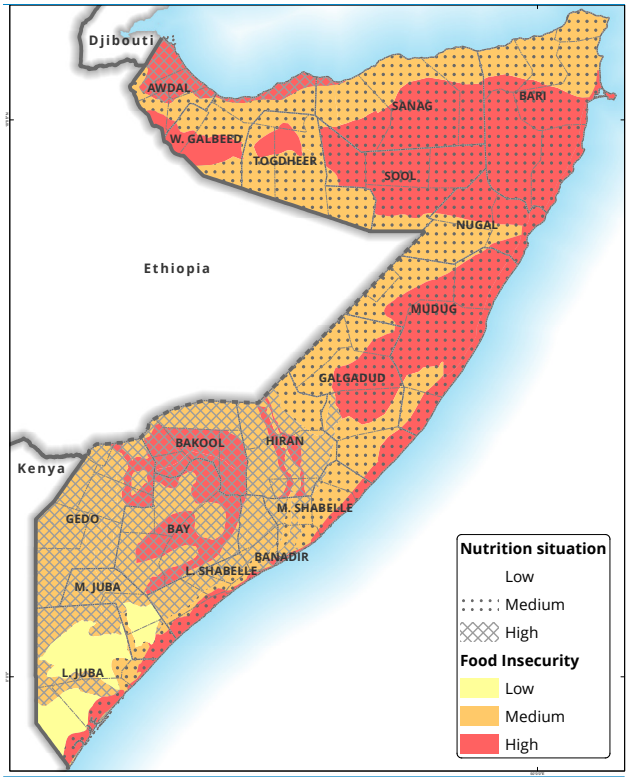
For the biggest IDP settlements, Mogadishu and Bosasso, the median GAM rate stood at 14,9 percent and 17.3 percent respectively.

The increased displacement presents significant challenges, especially for women and children. Family separation, either voluntary or forced, results in a high number of households being headed by women and children and such situations come with associated risks and vulnerabilities.

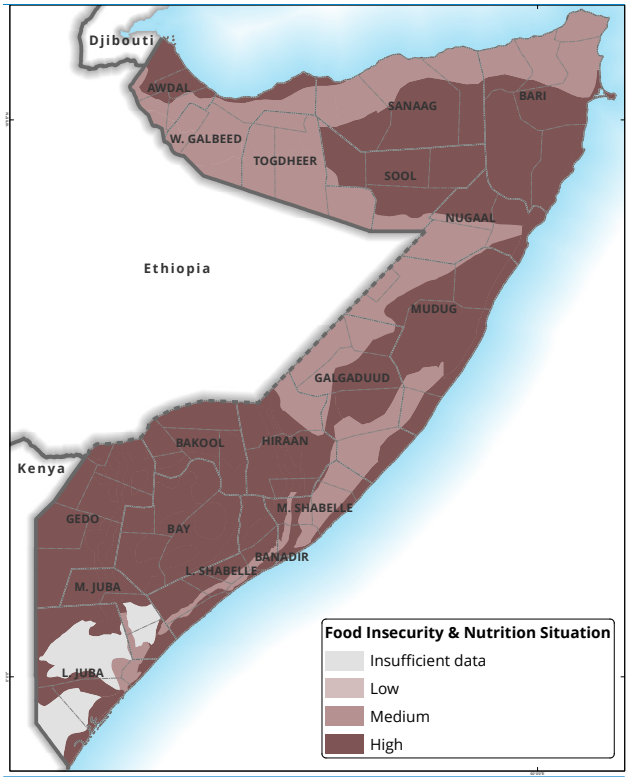
2.4.3 Combined nutrition and food security

Unlike at the national level where malnutrition and food insecurity appear to follow a similar pattern, at livelihood level there is variation. This is because malnutrition was highest in the southern region and in Guban Pastoral zone in northwest while food insecurity was highest in the northern region and in the livelihood zones of Southern Rainfed Agropastoral, Bay-Bakool Low Potential Agropastoral (in the southern region), and Coastal Dheeh Pastoral and Fishing (in central region). Map 26 shows an overlay of food insecurity and malnutrition and Map 27, a combination of the two maps, shows high risk of food insecurity and malnutrition in most zones in the south as well as in Northern Inland Pastoral, Guban Pastoral and Coastal Dheeh Pastoral and Fishing zones.

Map 26: Overlay of food security and nutrition situation



Map 27: Combined food security and nutrition

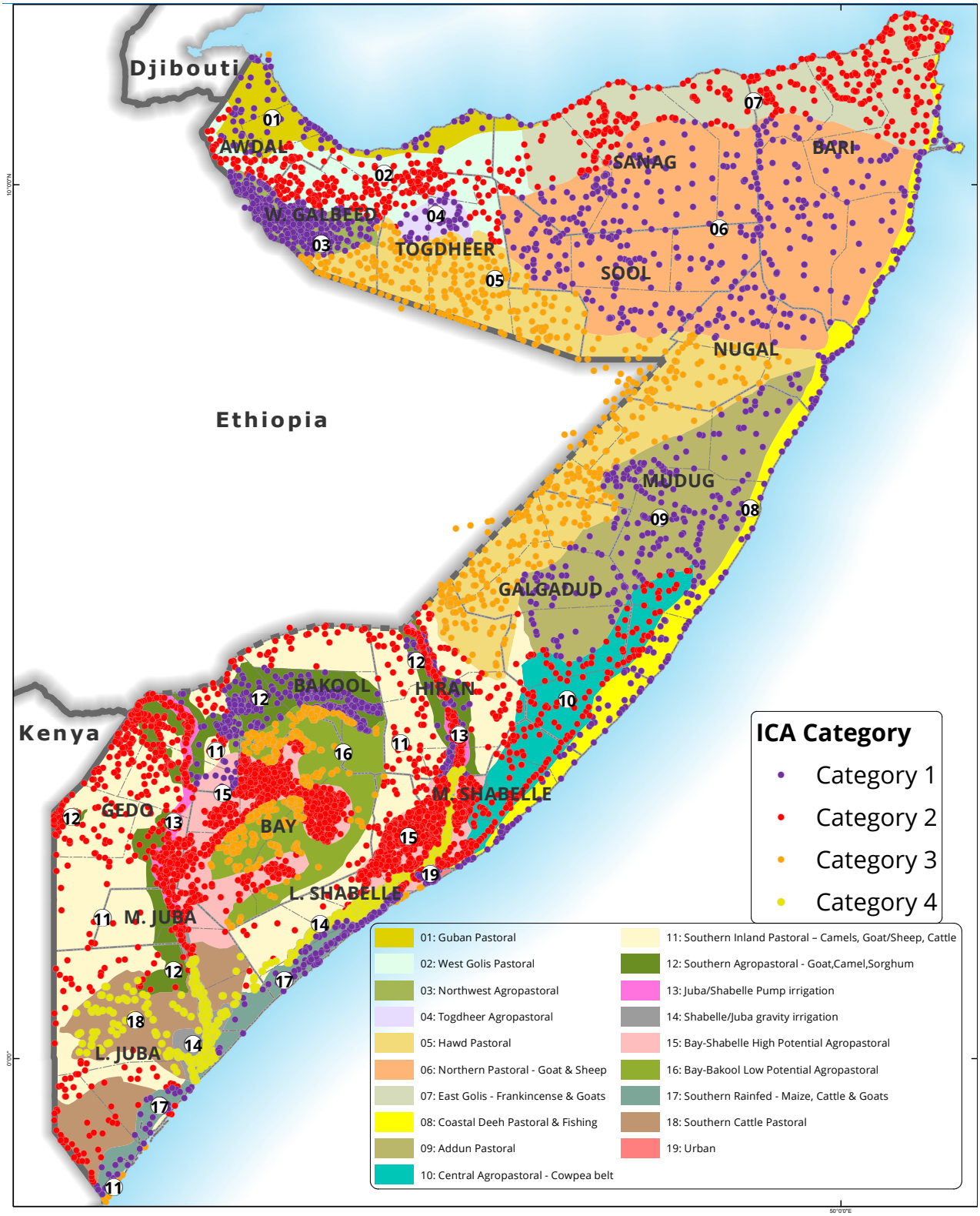


2.4.4 Livelihood Zones

Somalia has 19 livelihood zones according to FEWS NET/FSNAU 2015. These livelihood zones have varying livelihood sources (agricultural activities, livestock production or combinations of the two). Production and other activities/events at different times of the year are closely linked to the two rainy seasons (*gu* and *deyr*) that drive agriculture and natural vegetation growth. An understanding of their spatial distribution can inform where to expect the various shocks for purposes of devising appropriate programming interventions.

Map 28 shows the livelihood zones overlaid with settlements (assigned with the respective ICA categories), which illustrates where populations are concentrated and the level of exposure to food insecurity and natural shocks that they are subjected to.

Map 28: Livelihood zones and settlements by ICA categories



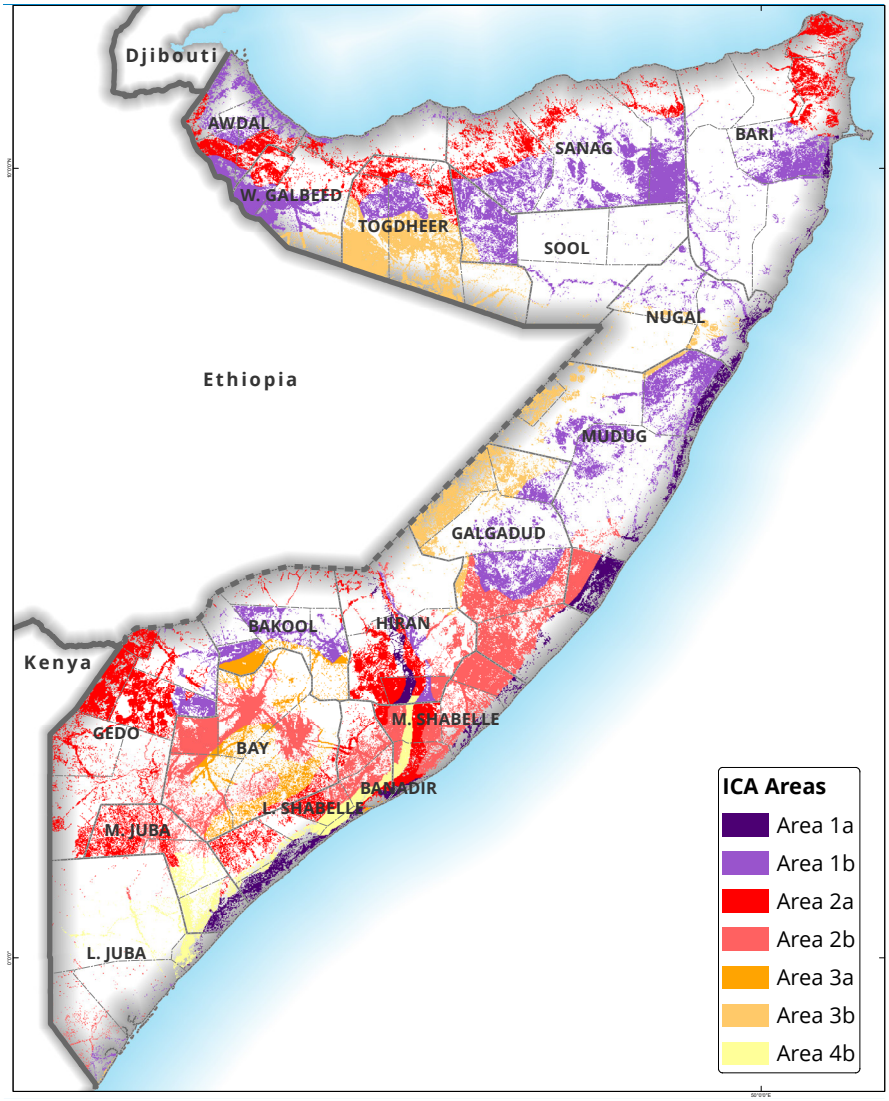
Settlements under ICA category 1 with the highest level of food insecurity and exposure to natural risks are relatively sparsely distributed except in Northwest Agropastoral zone and parts of Lower Shabelle region. Of concern are settlements falling under ICA category 2 given the high population density along the Juba and Shabelle basins, Sorghum High Potential Agropastoral zone in Bay region, West Golis zone and parts of East Golis zone. These are areas characterised by seasonal food insecurity and high exposure to natural shocks

2.4.5 Population

The 2014 population estimates by UNFPA show that livelihood zones of Northern Inland Pastoral, Hawd Pastoral and the Sorghum High Potential Agropastoral zones have high rural populations.

The distribution of population density by LandScan 2015 indicated that some of the highly populated areas are in the Shabelle basin, parts of Bay region and northwest of the country as well as in isolated areas of central and northern Somalia. Results further show that areas with a population density of more than six persons in a household (estimated household size by UNFPA 2014) and with highest levels of food insecurity and natural shocks (ICA areas 1a and 1b) are in Northern Inland Pastoral, Togdheer, Northwest Agropastoral, Addun Pastoral, parts of Coastal Dheeh Pastoral and Southern Rainfed Agropastoral livelihood zones (Map 29). Nevertheless, attention should also be paid to areas with a high concentration of human population and under ICA areas 2a such as Gedo, Middle Shabelle, parts of West and East Golis because potential risks can affect large masses of people.

Map 29: Areas of high population density and ICA Areas

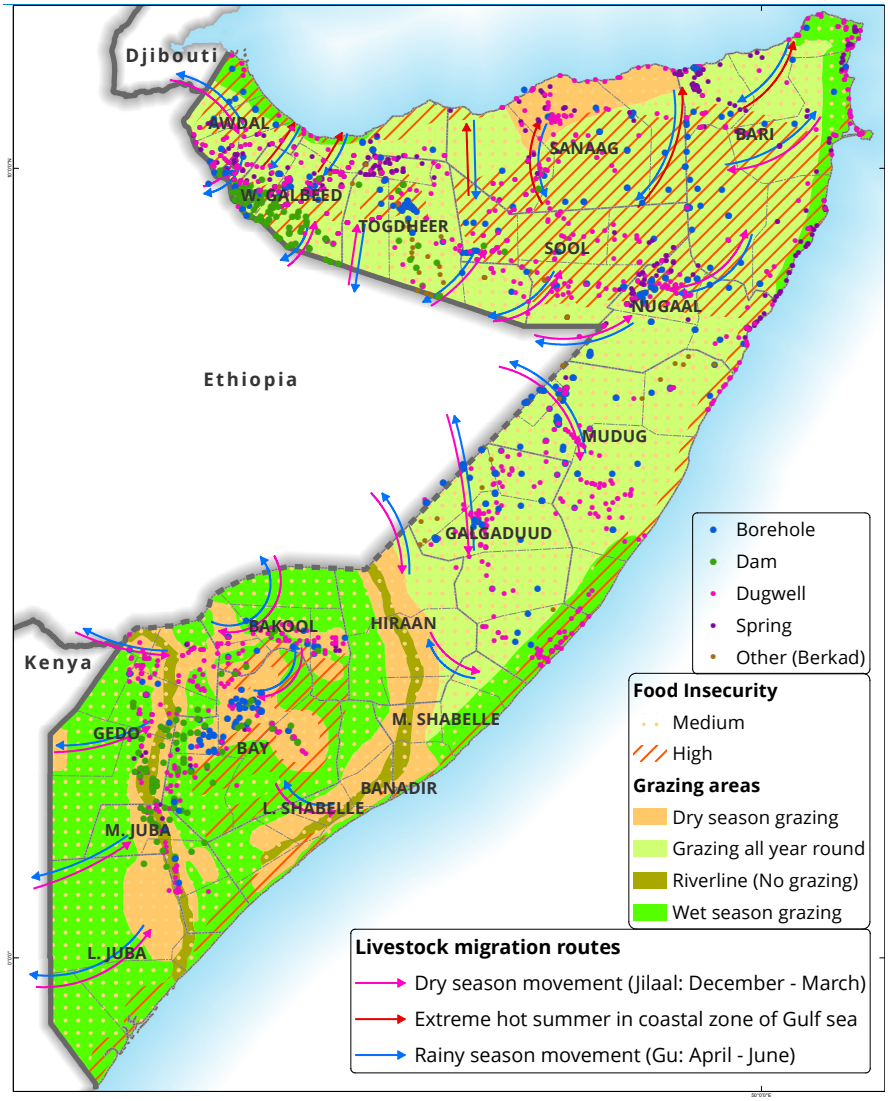


2.5 Additional Contextual Information

2.5.1 Livestock production

Livestock provides a livelihood base for pastoral and agropastoral populations in most of Somalia. It is a critical source of consumption products (milk and meat) that drive the food security and nutrition status. Livestock also generates incomes through sales that enable households meet their nutritional needs. Livestock production is highly influenced by climatic conditions. For instance, during periods of harsh climatic conditions, the livestock sector is highly affected leading to reduced productivity and sometimes losses through deaths as experienced in 2011 and in 2016/17. Map 30 shows the main grazing areas, livestock movement patterns across seasons and location of water points. During the rainy season when grazing resources are abundant, livestock in-migrate to usual areas and not far from migration routes within areas of the clan community. On the contrary, during the dry season they return to relatively wetter areas or dry season grazing areas in proximity to the rural homesteads where they can have more or less permanent water sources (wells or rivers). When rainfall is poor livestock out-migrates far away from homestead. When pastures are exhausted (because of overpopulation), livestock return home and towards permanent water sources. During the dry season in areas of Hawd (central and Togdheer/Sool regions), where there are only Berkads,[15] water trucking starts and pastoralists incur more water-related costs. To procure water, households need to sell livestock and that leads to asset depletion. Most areas in central and northern regions are used for all-year grazing.

Map 30: Livestock grazing areas, migration routes, watering points and food insecurity



15 A large cistern used to store water in the wet season for use during the dry season.

Water points enhance water availability for livestock especially during the dry season and therefore influence the outmigration processes. The spatial distribution of permanent water points is uneven, such as boreholes and dams, with expanded areas of eastern Mudug, Nugaal, parts of Bari, Sool, Sanaag, and the northwest of Somalia being poorly served. Some of these areas are served by seasonal water sources such as dug wells, which limit water availability during most times.

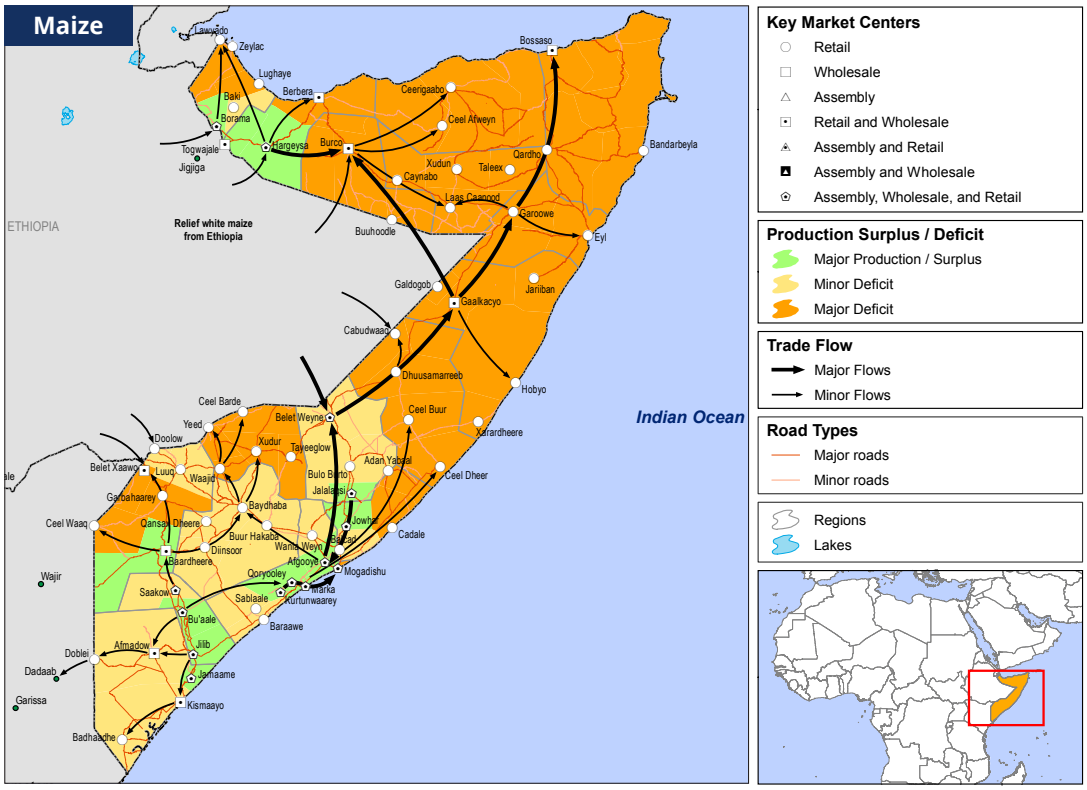
Livestock outmigration in search of water and pastures during the dry season limits access to and consumption of livestock products (milk and meat) and livestock sales for income, which in turn increases household vulnerability to food insecurity and malnutrition among children. Map 30 shows that some of the areas identified with high food insecurity are poorly served by livestock water points. Therefore, efforts should gear towards promoting water sources that avail water throughout the year, while promoting environmental management practices, such as rehabilitating degraded lands to improve rangeland productivity and production for livestock.

2.5.2 Markets flows and accessibility

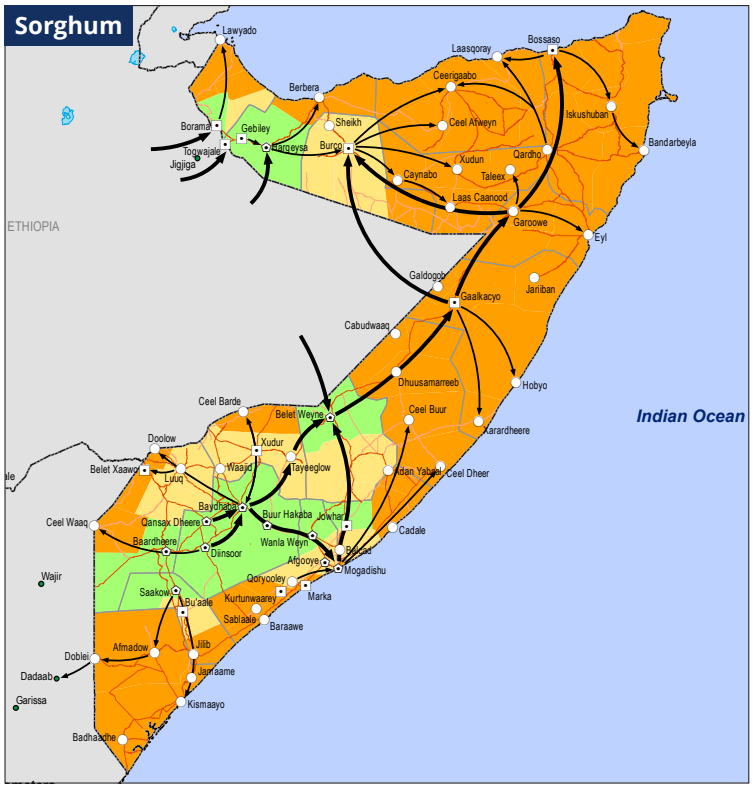
In Somalia, markets play a crucial role in the movement of goods and services from areas of production to areas of deficits. The markets are also instrumental in channelling imported foods from main port of entry to places where they are needed the most.

Available information on production and flows for maize, sorghum and sesame indicates that crop production is mainly undertaken in the south and northwest parts of the country (Map 31), while most other areas face deficits and households rely on markets to access these commodities. Rice is mostly imported into the country. Most areas with high food insecurity in the north and central are under pastoral livelihoods and are characterised by major crop production deficits. Despite commodity flows to these locations through retail outlets, there is a possibility that some households do not access adequate amounts for consumption due to lack of income or insufficient food supplies in markets. A closer look at the livestock production, which is a major livelihood base for pastoral and agropastoral zones, shows that some areas face production deficit just as with crops (Map 32). This can lead to insufficient livestock sales to meet household needs. Hence, an understanding of market functionality in these areas is highly needed to devise interventions and to strengthen households' access to food, including through cash-based transfers.

Map 31: Crop production and trade flows in Somalia



Sorghum



Key Market Centers
- Retail
- Wholesale
- Assembly
- Retail and Wholesale
- Assembly and Retail
- Assembly and Wholesale
- Assembly, Wholesale, and Retail

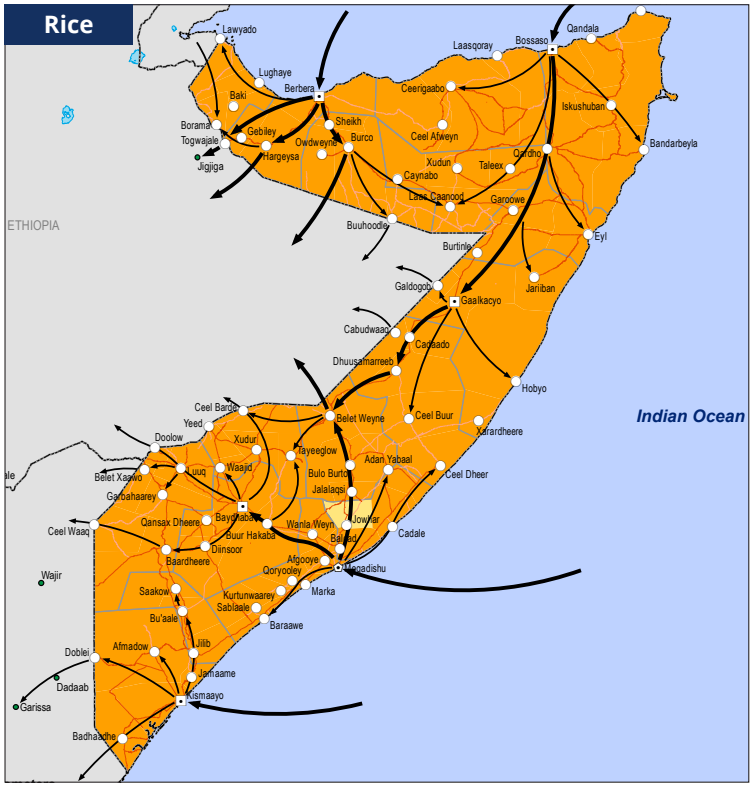
Production Surplus / Deficit
- Major Production / Surplus
- Minor Deficit
- Major Deficit

Trade Flow
- Major Flows
- Minor Flows

Road Types
- Major roads
- Minor roads

- Regions
- Lakes

Rice



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- Major Deficit

Trade Flow
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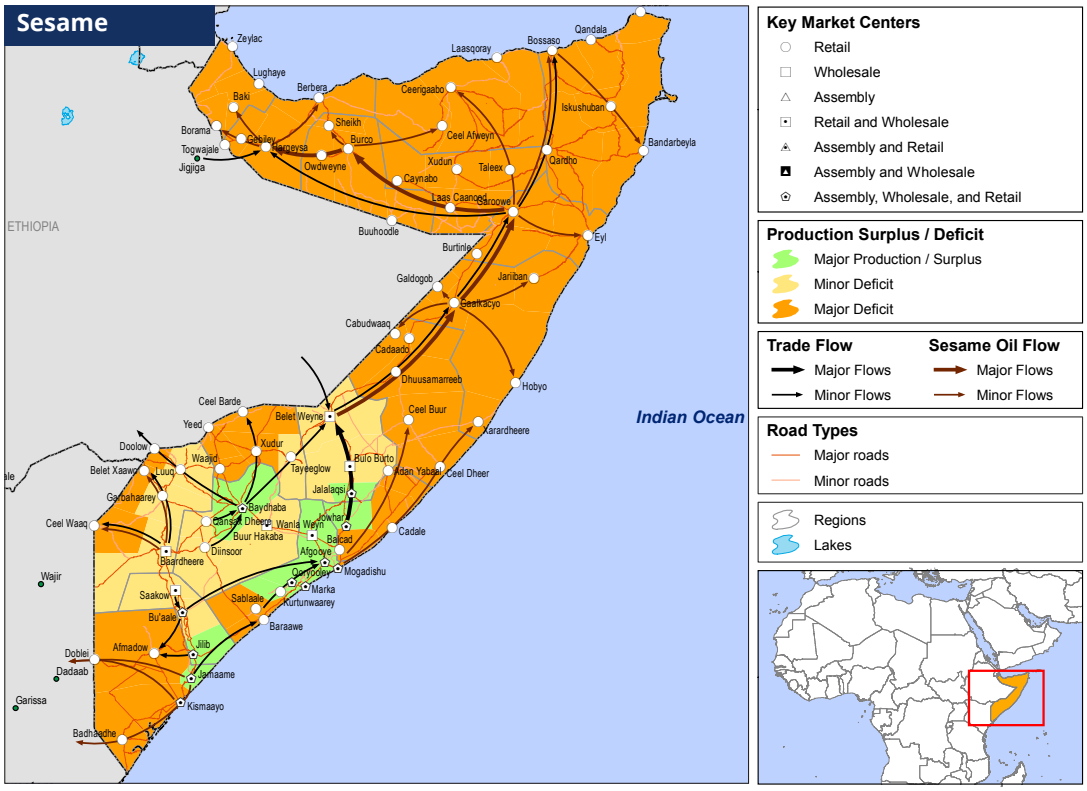
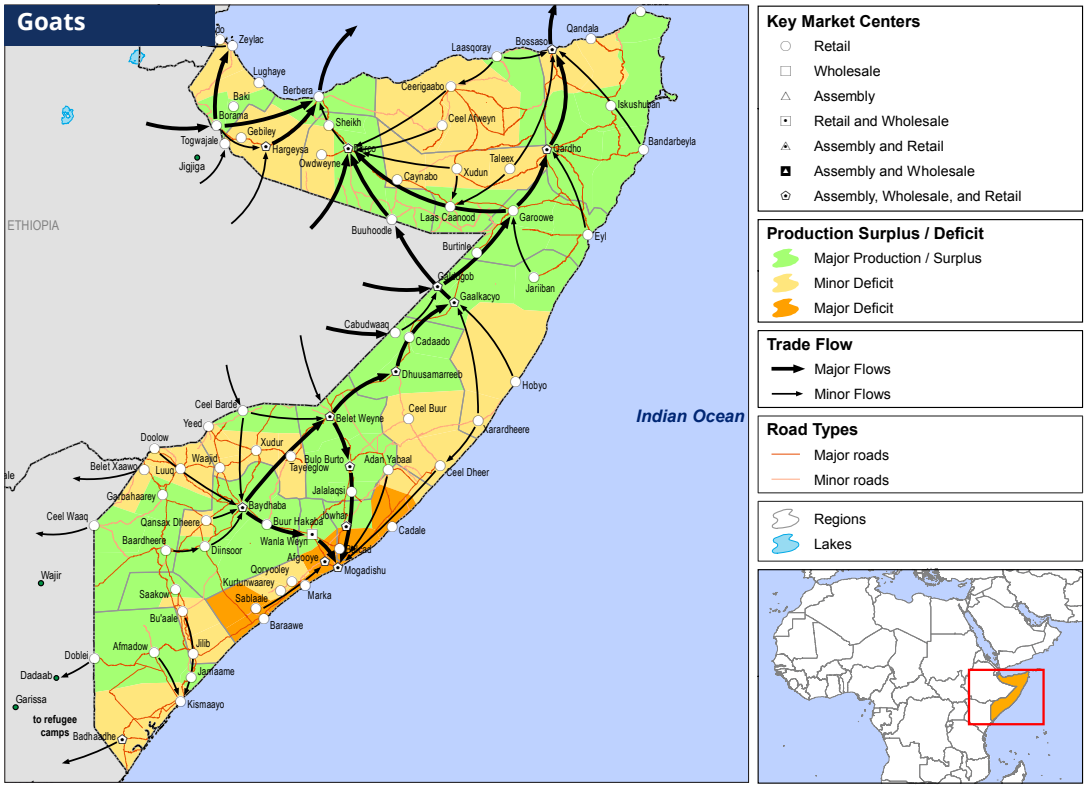
- Minor Flows

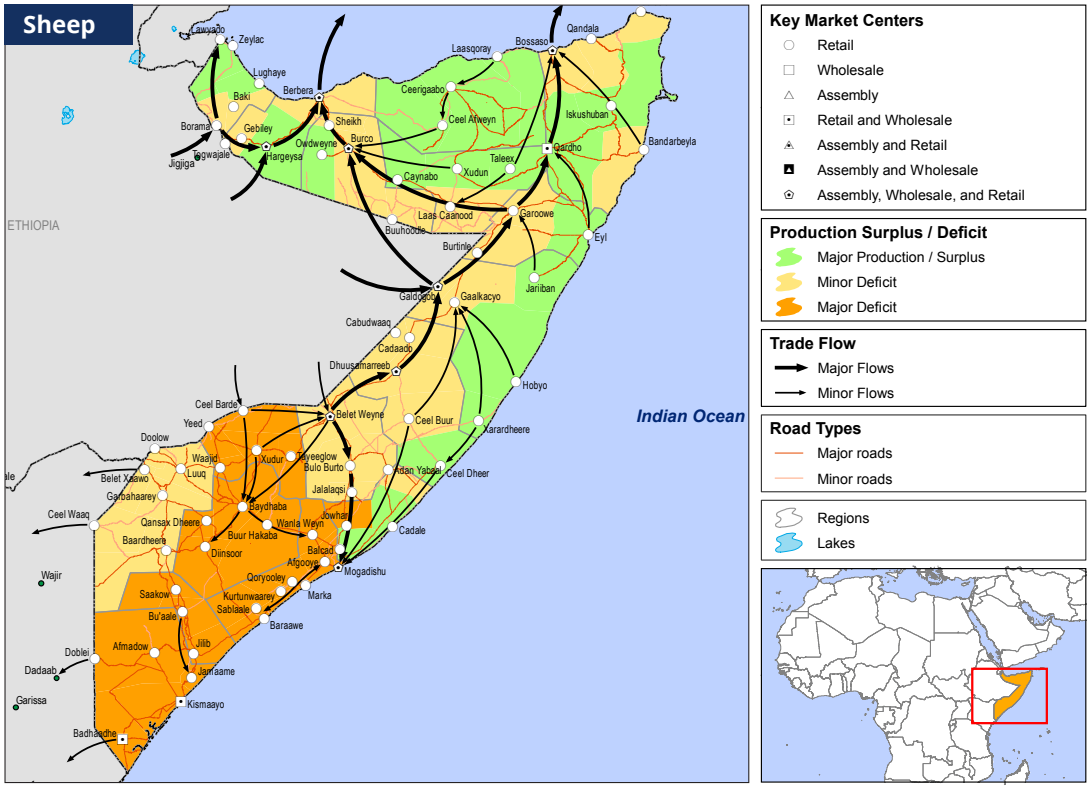
Road Types
- Major roads
- Minor roads

- Regions
- Lakes



Map 32: Livestock production and trade flows

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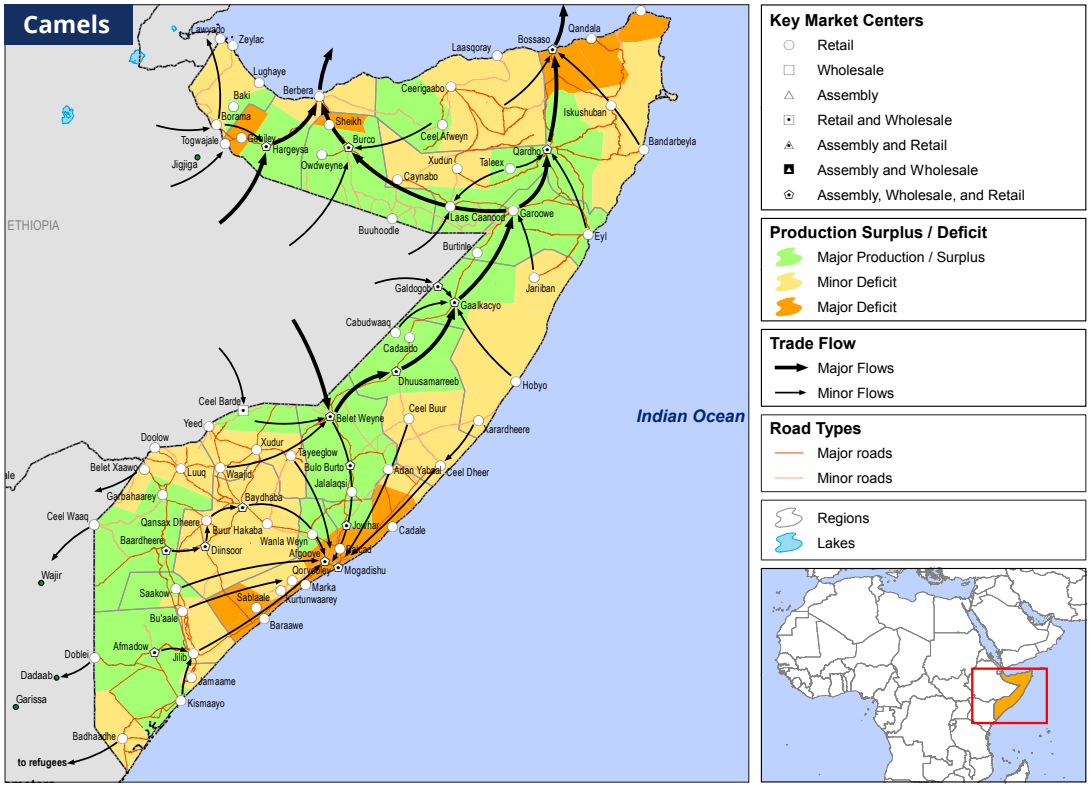
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Jigjiga
Sheikh
Burco
Owdweyne
Ceerigaabo
Laasqoray
Bossaso
Qandala
Ceel Afweyn
Iskushuban
Bandarbeyla
Qardho
Taleex
Caynabo
Xudun
Laas Caanood
Garoowe
Buuhoodle
Burtinle
Eyl
Galdogob
Gaalkacyo
Jariiban
Cabudwaaq
Cadaado
Dhuusamarreeb
Hobyo
Ceel Barde
Yeed
Belet Weyne
Ceel Buur
Xarardheere
Doolow
Waajid
Luuq
Xudur
Tayeeglow
Bulo Burto
Adan Yabaal
Ceel Dheer
Belet Xaawo
Garbahaarey
Baydhaba
Jalalaqsi
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Qansax Dheere
Baardheere
Buur Hakaba
Wanla Weyn
Diinsoor
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Mogadishu
Cadale
Wajir
Qoryooley
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Saakow
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Bu'aale
Baraawe
Afmadow
Jilib
Dobley
Dadaab
Jamaame
Garissa
Kismaayo
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Assembly and Retail
Assembly and Wholesale
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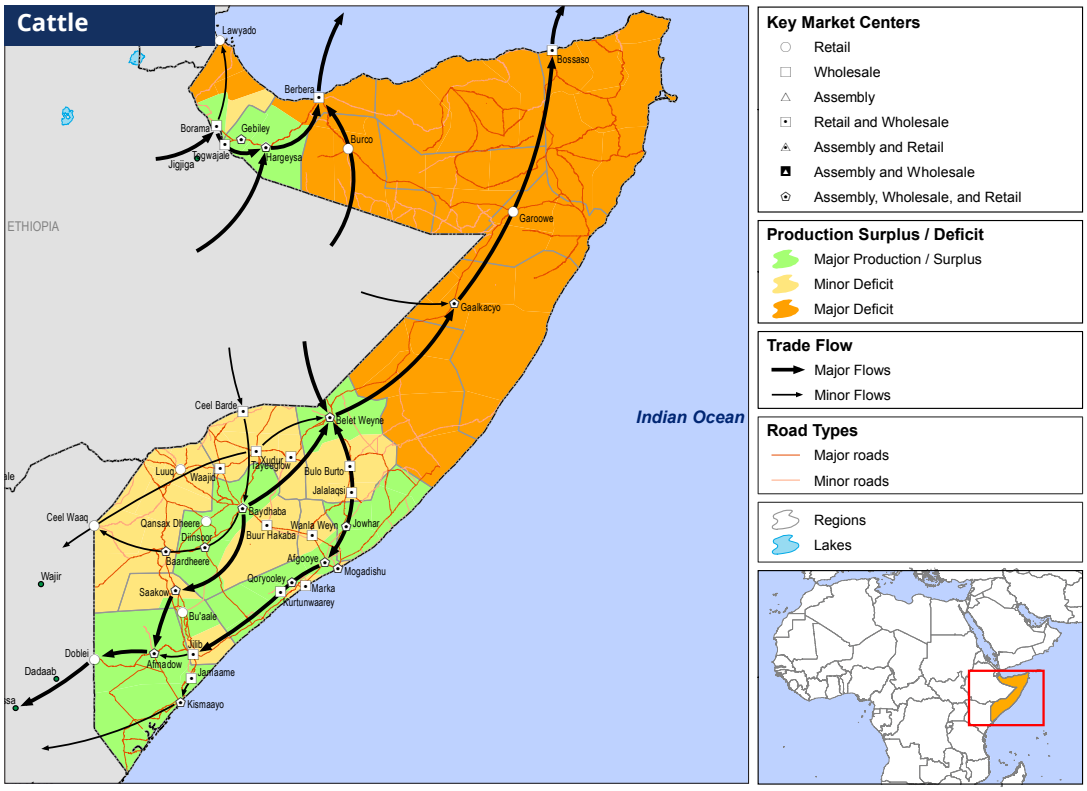
Minor Deficit
Major Deficit
Trade Flow
Major Flows
Minor Flows
Road Types
Major roads
Minor roads
Regions
Lakes



The price of food commodities (red sorghum, imported rice and white maize) were relatively stable during the 2012 – 2015 period (Figures 8-11) a period during which Somalia experienced favourable climatic situation allowing for local production. The prices however increased from late 2016 and into early 2017 (mirroring the 2011 situation). This followed the 2016/2017 droughts that affected local production despite increased demand due to reduced availability of livestock consumption products. While the prices declined in 2018 following the favourable first season, in some markets such as Las Anod, Galkayo and Bossaso (all in northern areas), the prices have remained relatively high. This is especially notable for red sorghum in Bossaso where it has been significantly above other market locations.

The terms of trade between goat and staples worsened in 2017 just as in 2011 due to effects of drought (Figure 11). Increasing and high food prices erodes the households purchasing power thereby limiting the amount of food they can purchase for consumption, which drives food insecurity.

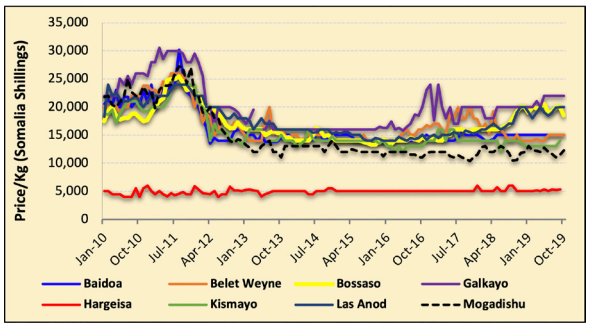


Figure 8: Trend of market price for imported rice

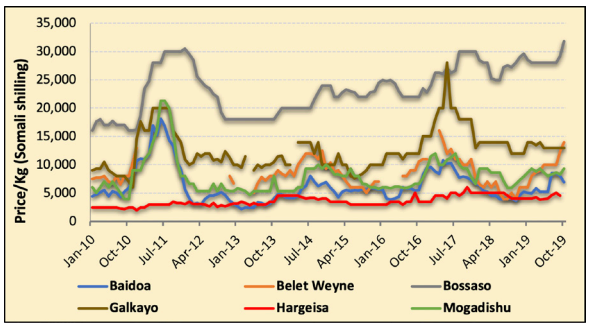


Figure 9: Trend of market price for red sorghum

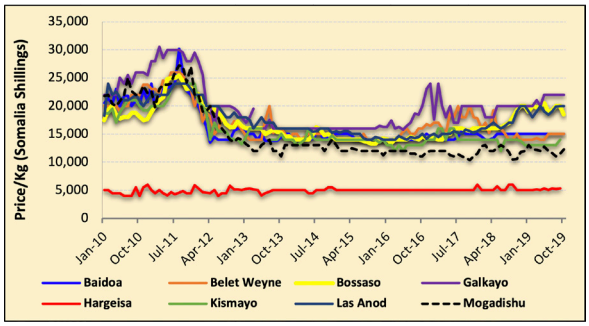


Figure 10: Trend of market price for white maize

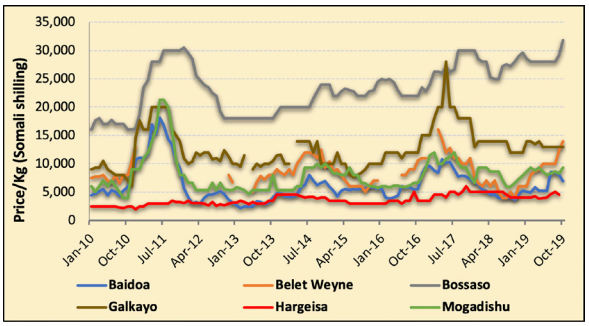
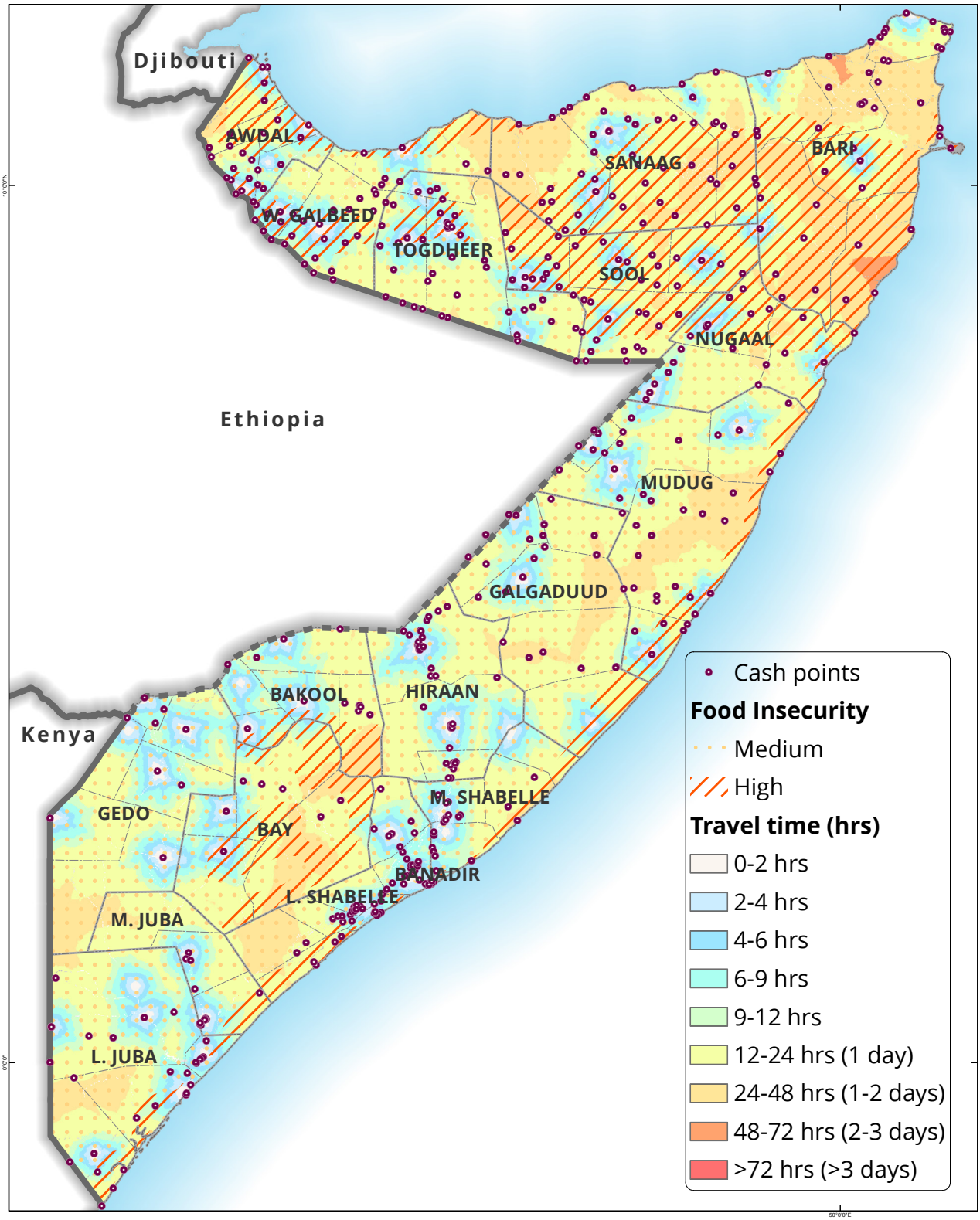


Figure 11: Terms of trade (ToT) for goat against rice, red sorghum and white maize

Based on the market accessibility model,[16] market services could be challenged by poor physical access, especially in parts of north and northeast, central and southern, where it takes a long time (reaching some areas can take more than a day) to access the nearest market (Map 33). As a result, households may face challenges in accessing markets to trade livestock and generate income and/or purchasing food and non-food items, which could contribute to high food insecurity. When comparing the market accessibility with presence of cash points for cash-based transfers interventions by humanitarian actors, a correlation is evident in the country.

16 The Accessibility model considers many factors like distance (road network), time, cost (derivative of topography of the area, physical features) in respect to major towns and points of interest.

Map 33: Physical accessibility to markets overlaid with food insecurity



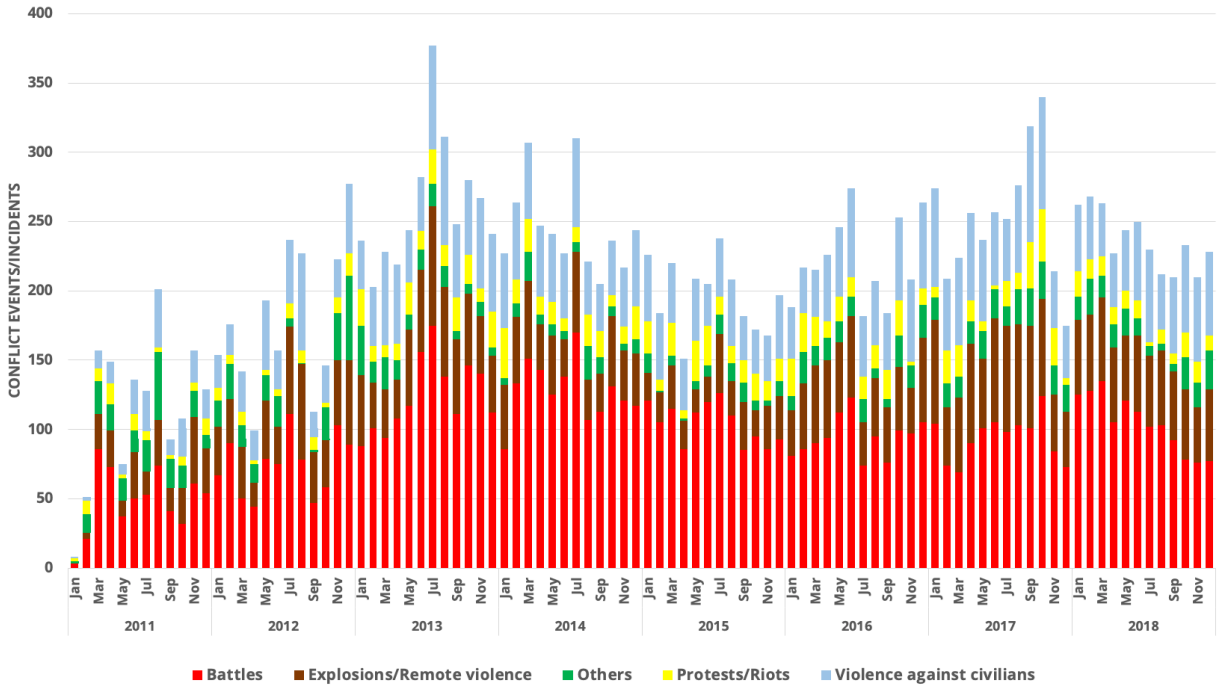
2.5.3 Conflicts and population movement

Since the fall of government in 1991, Somalia has experienced conflicts and insecurity with varying implications on the population and humanitarian operations. Thousands of people have been displaced and have moved to IDP camps while others have fled into neighbouring countries as refugees. Data collected from 2011 and onwards shows numerous incidences of conflicts, battles and violence against civilians with peaks in 2013 and 2017 (Figure 12). Annual summaries show that the highest number of incidences were encountered in 2013 and 2017.

Number of incidences per type of conflict from 2012 - 2018

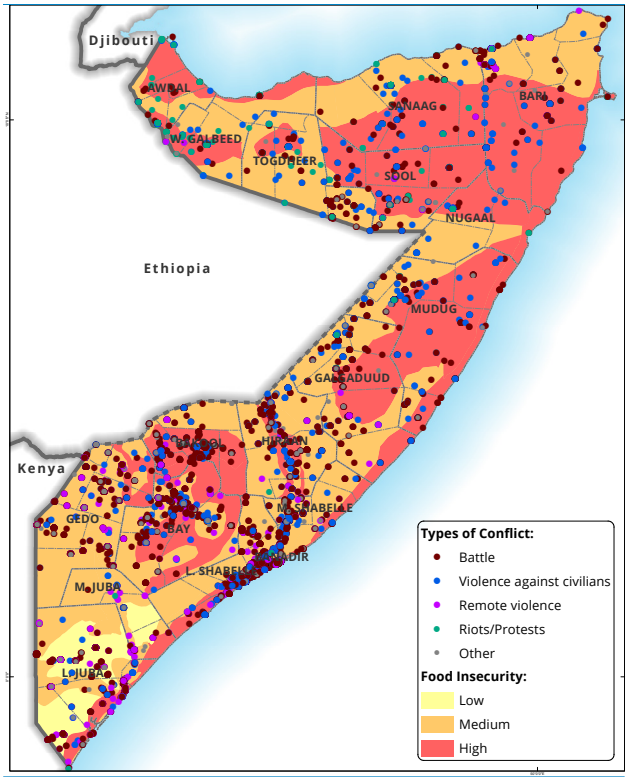
Conflict type	Year						
	2012	2013	2014	2015	2016	2017	2018
Battles	891	1,486	1,535	1,254	1,132	1,126	1,255
Explosions/Remote violence	504	601	492	312	555	743	623
Protests/Riots	98	215	212	209	214	213	149
Violence against civilians	413	660	585	484	578	713	617
Others	238	174	122	101	185	238	193
Total	**2,144**	**3,136**	**2,946**	**2,360**	**2,664**	**3,033**	**2,837**

Figure 12: Number of conflict events by type 2011–2018

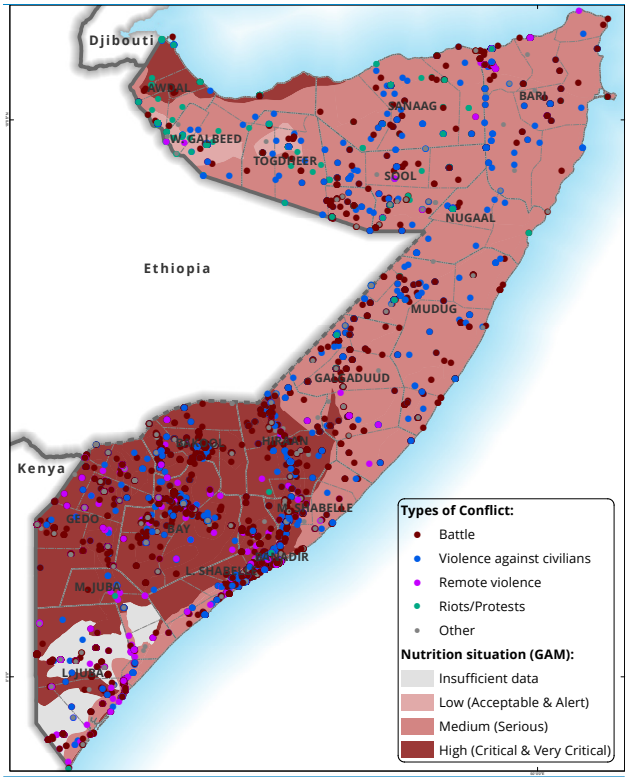


The spatial occurrence of conflicts is concentrated in some of the country's main production areas along the Shabelle river basin, in Bakool, Gedo and Bay regions as well as in parts of central and northern regions. This concentration poses a threat to production as it limits households' access to agricultural or grazing fields and are characterised by moderate to high food insecurity as well as high malnutrition (Map 34 and 35). The annual distribution of conflict incidences is shown in Annex IV. Similarly, the attacks on aid workers between 1997 and 2018 show that most attacks occurred in the southern areas with concentration in Banadir region (Map 36). These attacks may have posed challenges to provision of humanitarian assistance in some of the localities characterised by high food insecurity and malnutrition. Conflicts and insecurity are known to challenge physical access to markets and other needed social services in some of these locations, including the delivery of goods and services by road. Conflicts also limit access to grazing resources and fields which can negatively impact livestock productivity that supports household food needs.

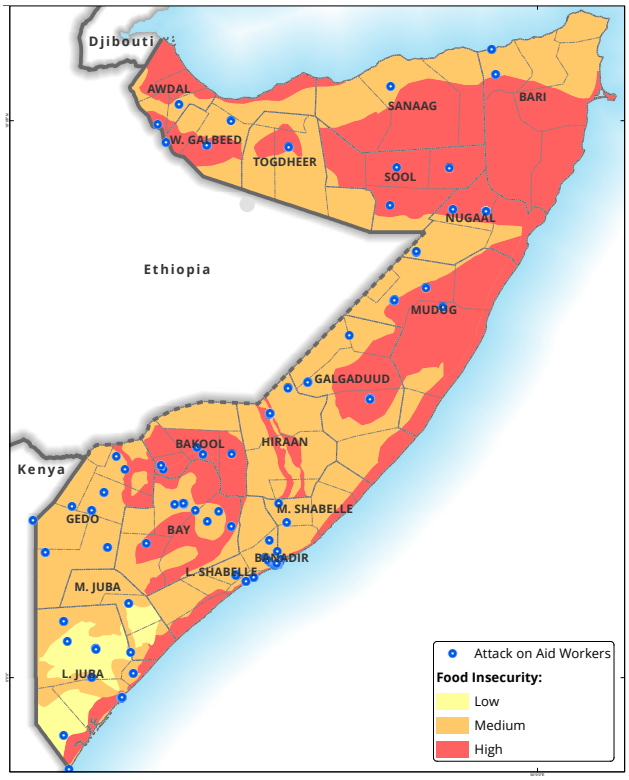
Map 34: Overall conflict incidences and food insecurity (2012-2018)



Map 35: Overall conflict incidences and malnutrition (2012-2018)

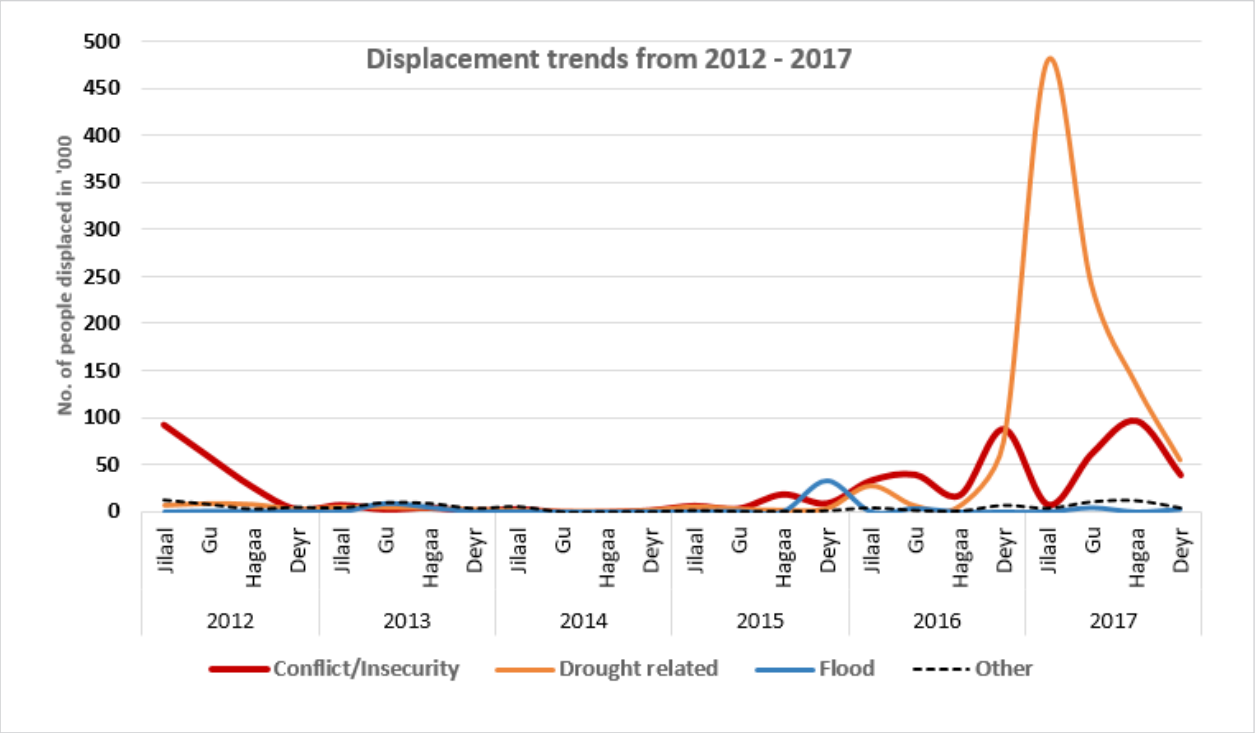


Map 36: Overall attacks on aid workers and food insecurity (2012-2018)

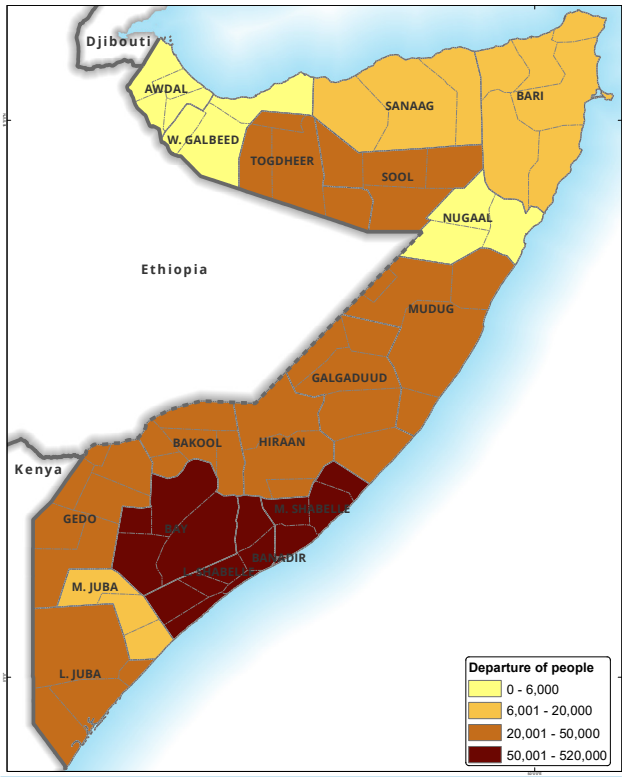


Statistics on displacements due to conflicts show relative stability from end of 2012 to late 2015 and thereafter fluctuations with three peaks in late 2016, mid 2017 and in 2018 (Figure 13). This signals a worsening security situation in recent years with potential negative impacts on populations where they occur. Displacements due to conflicts have mainly been in the south in Lower Shabelle, Bay, Banadir, Middle Shabelle regions (Map 37 and 38). This is unlike displacements by other causes (droughts, floods and others) that are high in parts of south (Bay, Hiraan, Bakool, Gedo, Banadir and Lower Shabelle), central (Mudug) and north (Sool and Togdheer) as shown in Map 39 - 42.

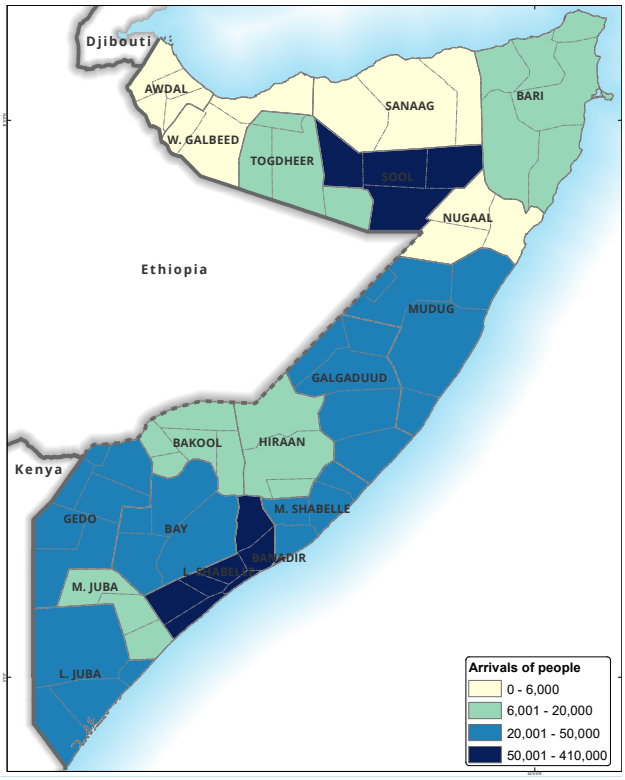
Figure 13: Human displacements from 2012–2018



Map 37: Total displacements due to conflicts, 2012-2018

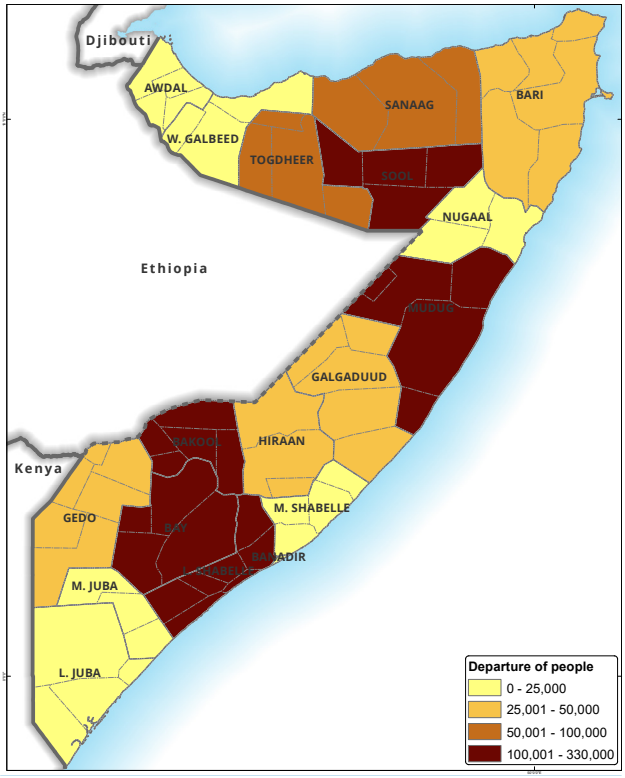


Map 38: Total arrivals due to conflicts, 2012-2018

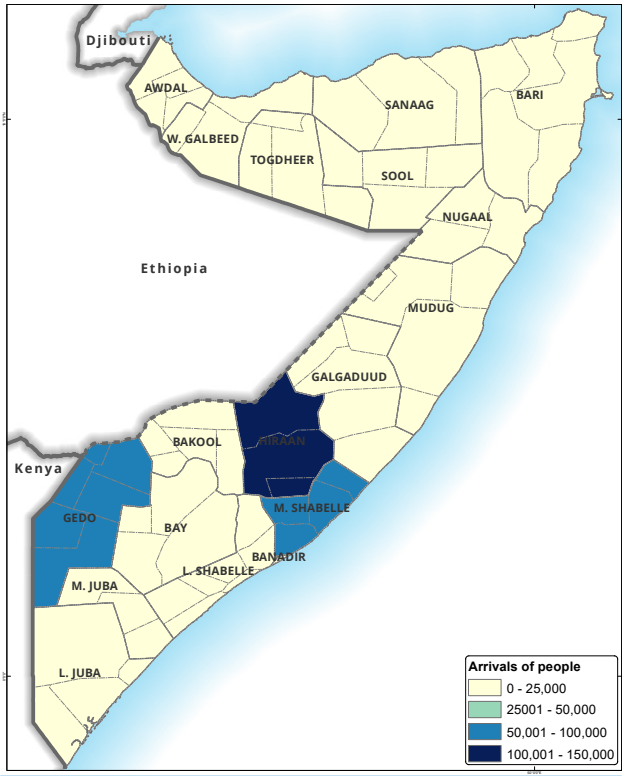


Populations displaced by conflicts end up in camps or other relatively safe areas mostly in Lower Shabelle, Banadir, Gedo, Lower Juba, Middle Shabelle and Galgaduud as shown in Map 37 and 38, while those displaced by other factors moved to Bay, Sool and Mudug regions (Map 39 - 42). The analysis shows in the southern and central areas experienced a high movement for people when comparing to northern Somalia that are displaced as a result of conflict. This can partly be attributed to the fact that persons displaced due to conflict spend long periods in camps with limited livelihood opportunities as compared to displacements by other causes where people are able to return to their homesteads after relatively short periods of time.

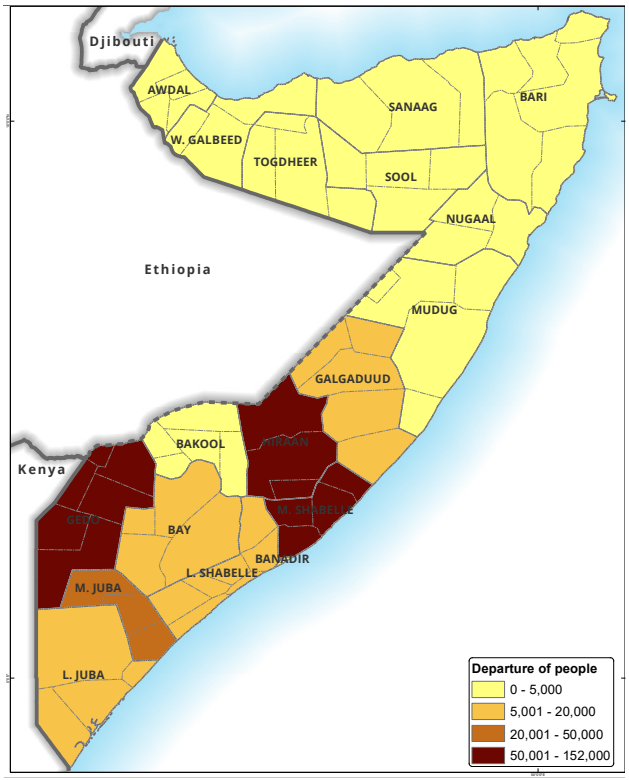
Map 39: Total displacements due to drought, 2012-2018



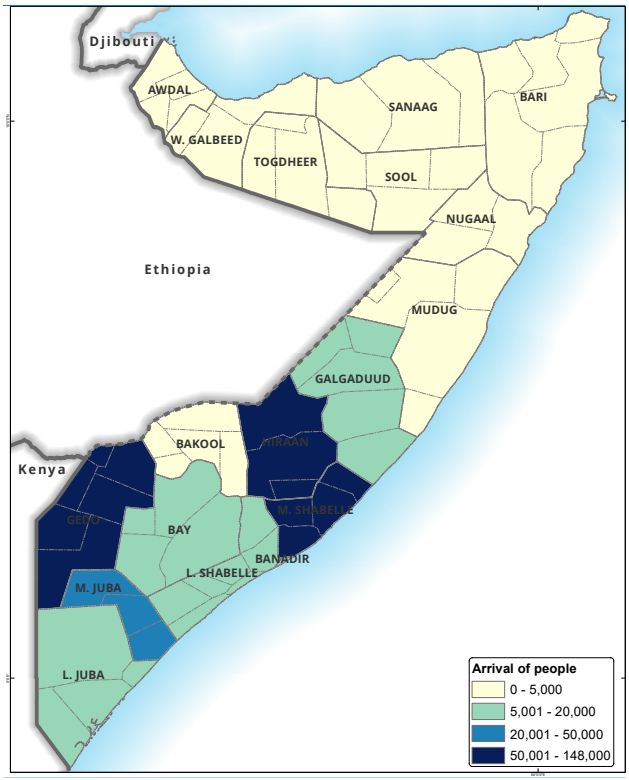
Map 40: Total arrival due to drought, 2012-2018



Map 41: Total displacements due to floods, 2012-2018



Map 42: Total displacements due to floods, 2012-2018



The ICA can be used to target efforts and government and partners can be **better coordinated in ensuring that their programming supports and complements each other's efforts,** thus avoiding duplication and gaps.

Chapter 3
ICA programmatic recommendations

3.1 Programme implications

The aim of conducting an ICA is to identify areas for planning broad long-term programmatic strategies to support food insecure and vulnerable populations. It provides insight on geographic areas where implementation of different programmes is needed to tackle or mitigate risks that threaten development gains made in improving food security. ICA findings and programme implications will significantly contribute to Somalia's Recovery and Resilience Framework (RRF) strategies. The ICA advocates tailoring support to link humanitarian and development efforts in ways that make the most sense according to unique geographical contexts.

The following sections provide an overview of response recommendations for the various ICA categories and areas. However, these are not exhaustive and further discussions with stakeholders implementing interventions in Somalia, including government and the affected populations are needed to customise the interventions to local needs and contexts. Hence, seasonal livelihood programming and community-based participatory planning should be emphasised as follow-up activities to make best use of the analysis findings while planning interventions.

3.2 Programmatic themes derived from ICA areas and categories

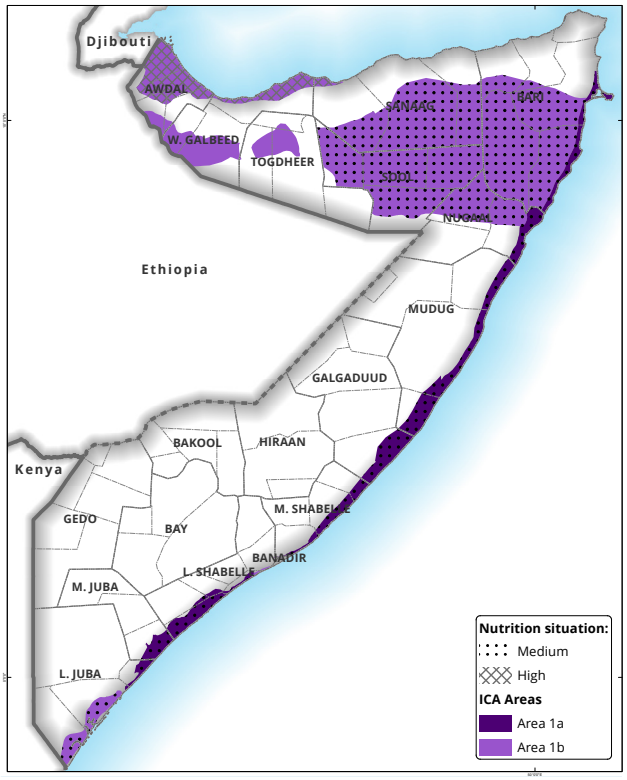
ICA classifies livelihood zones in five categories based on their levels of recurring vulnerability to food insecurity and exposure to natural climate-related hazards. ICA categories and areas provide evidence to inform discussions and selection of broad programmatic strategies using thematic building blocks of safety nets, DRR, early warning and disaster preparedness.

Combined level of natural shocks	Recurrence of vulnerability to food insecurity above threshold		
	LOW	MEDIUM	HIGH
LOW	Area 5	Area 3b	Area 3a
MEDIUM	Area 4b	Area 2b	Area 1b
HIGH	Area 4a	Area 2a	Area 1a

CATEGORY 1	Persistent food insecurity suggests that safety nets providing predictable support to vulnerable populations may be appropriate, whilst high shock risk justifies DRR, including the use of early warning systems and preparedness.
CATEGORY 2	Intermittent food insecurity patterns may be related to either shocks (natural or man-made) or due to seasonal factors. If seasonal, safety nets can reduce predictable food insecurity; if shocks are a cause, a recovery focus may be suitable. At the same time, high shock risk argues for DRR, including the use of early warning systems and preparedness.
CATEGORY 3	Locations identified as area 3a show persistent food insecurity that can justify safety nets. Area 3b is more likely linked to seasonal factors where safety nets may also be applicable, or because of shocks, where recovery is more of a focus. Whilst natural shock risk is lower, local contexts may benefit from early warning and preparedness to reduce risk from possible events.
CATEGORY 4	In the absence of a clear long-term food insecurity entry point (noting that pockets of food insecurity may exist), DRR including an early warning system and preparedness is a priority. Furthermore, attention should be paid to land degradation given that this could worsen future shocks, potentially impacting food security.
CATEGORY 5	In the absence of a clear long-term food insecurity entry point (noting that pockets of food insecurity may exist) programme themes should concentrate on DRR to a level justified by the risk. This can include ensuring appropriate early warning and preparedness relative to risk, as well as mitigating land degradation and other risk reduction measures.

While the analysis of the Somalia ICA focuses on rural populations, solutions to address the needs of the IDPs, who remain one of the most vulnerable population groups in the country, should continue. At the same time, the phenomenon of rural to urban migration is an emerging concern to be addressed.

ICA category 1 livelihood zones: combining food security safety nets and DRR



Category 1 areas have high recurrence of food insecurity (crisis and emergency), combined with high or medium levels of natural shock risk over the past six years.

Safety nets providing predictable support to vulnerable populations is recommended to address the persistent food insecurity in these areas. This should be supported by DRR, including early warning and preparedness to mitigate the high shock risks.

Level Natural shock	Recurrence of Food Insecurity		
	LOW	MEDIUM	HIGH
LOW	Area 5	Area 3b	Area 3a
MEDIUM	Area 4b	Area 2b	Area 1b
HIGH	Area 4a	Area 2a	Area 1a

The target livelihood zones include the Northern Inland Pastoral, Guban Pastoral, Northwest Agropastoral, Togdheer Agropastoral, Coastal Dheeh Pastoral and Fishing and Southern Rainfed Agropastoral zones. Populations in these areas require longer-term programming to address conditions of protracted crises and frequent natural shocks that impede recovery, aimed at improving food security, reducing risk and building resilience to natural shocks and other stressors.

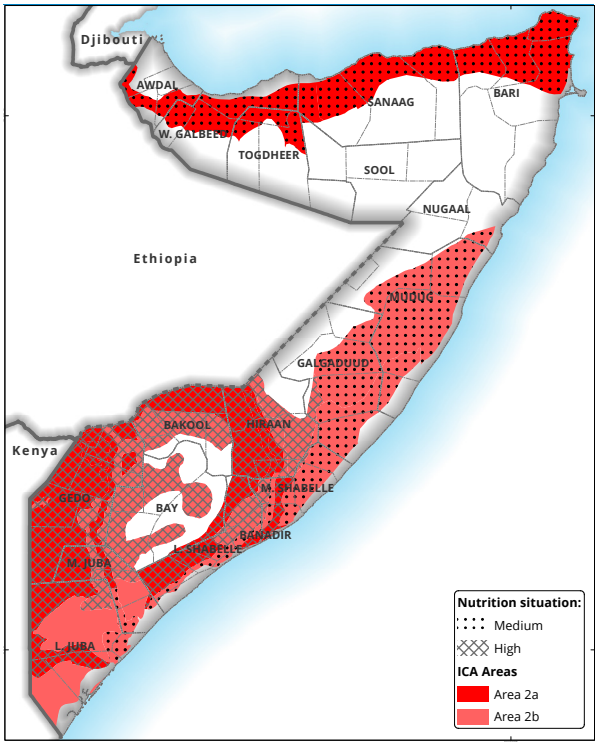
The recommended interventions include the following:

* **Food assistance and safety nets:** A consistent, predictable support throughout the year that assists most vulnerable people in meeting basic food needs, reducing food insecurity and poverty by strengthening livelihoods, and simultaneously reducing the risk and impact of shocks.
* **Disaster risk reduction, early warning and preparedness, and awareness creation:** This would include physical measures to reduce risks, interventions geared towards strengthening early warning systems for flood and drought monitoring and monitoring of people's displacement. Emphasis should be made to target climate sensitive and productive sectors such as agriculture, livestock and fisheries.
* **Water development:** Support communities in areas prone to droughts with water development, rehabilitation of existing water resources as well as water-trucking during critical times such as during droughts.
* **Destocking and restocking:** support communities dispose off their livestock before any prevailing drought to ensure they don't loose all their stock. This should be coupled with effective monitoring of markets and provision of market-oriented information. Once the drought episodes are over, the affected households/ communities can be supported to restock in order to rebuild their livelihoods.

* **Agricultural and post-harvest support:** after periods of droughts and floods, assistance to affected communities re-enter production should be promoted by availing the required inputs. This should be undertaken alongside promoting effective food storage facilities at household level whereby households can store food during harvests for use during periods of scarcity.
* **Markets and physical infrastructure:** interventions for strengthening the functioning of markets and enhancing physical access in areas where accessibility might be an issue, especially in Coastal Deeh Pastoral and Fishing livelihood zone, will be beneficial (Map 33). Besides, availability of key commodities is difficult in some areas, making strengthening of food systems and value chains appropriate.
* **Environmental awareness programme and natural resources management (NRM):** This should be considered alongside safety nets as a key foundation for building resilience to recurring crises that compromise development. This would include, among other things, stabilising landscapes and reducing land degradation that aggravates the likelihood of risk and livelihood support to pastoralists to prevent destitution.
* **Nutrition:** Areas under this category have either medium or high levels of malnutrition. Interventions geared towards prevention of malnutrition (wasting, micronutrient deficiencies or stunting), treatment of any type of malnutrition or a combination of prevention and treatment along with the strong social behavioural change communication on health and nutrition with specific focus on improved dietary diversity and IYCF practices are recommended. Formulate an integrated response using safety net programmes as a platform for nutrition sensitive programming. It is important that the nutrition sensitive programming are integrated in the national social protection programme. In addition, seasonal nutrition preventive interventions in Guban livelihood zone during lean periods should be explored due to the high levels of malnutrition.

  Overall, food and nutrition security in areas in category 1 seems to be correlated. Pathways between food security and nutrition interventions should be strengthened while applying nutrition lens across sectorial interventions.

ICA category 2 livelihood zones: supporting seasonal food insecurity and/or post-shock recovery



Areas under Category 2 have moderate levels of recurrence of food insecurity (as opposed to persistent recurrence as seen in Category 1 areas) coupled with high or medium natural shock risks.

Intermittent food insecurity patterns may be related to either shocks (natural or man-made) or seasonal factors. It is recommended that safety nets are provided at particular times of the year to reduce predictable seasonal food insecurity; recovery interventions, DRR and early warning activities and preparedness should be implemented in case of shocks.

Level Natural shock	Recurrence of Food Insecurity		
	LOW	MEDIUM	HIGH
LOW	Area 5	Area 3b	Area 3a
MEDIUM	Area 4b	Area 2b	Area 1b
HIGH	Area 4a	Area 2a	Area 1a

Category 2 carries the bulk of livelihood zones and includes West Golis Pastoral, East Golis Pastoral, Addun Pastoral, Southern Inland Pastoral, Sorghum High Potential Agropastoral, Cowpea Belt Agropastoral, Riverine Pump Irrigation and Riverine Gravity Irrigation zones. To address vulnerability, measures towards **seasonal food insecurity and/or post-shock recovery** are needed, whilst reducing risk and building resilience to frequent natural shocks and other stressors. Early warning and preparedness measures are key and productive and/or protective safety nets that address seasonal food insecurity and their causes would be relevant. A combination of humanitarian and development actions are required, with the former also safeguarding development gains. The following are measures that can be considered for implementation:

* **Emergency support and safety nets:** Productive or protective seasonal safety nets geared towards strengthening livelihoods, stabilising landscapes and/or reversing degradation to reduce the risk of shocks would ensure food and other basic needs are met without depleting assets. This can allow seasonal livelihood programming to cater for seasonal hunger by engaging vulnerable populations in activities and by enabling them to generate income to buy food.
* **Disaster risk reduction, early warning and preparedness:** This includes physical measures to reduce risks and interventions geared towards strengthening early warning systems for flood and drought monitoring. In addition, special attention to population movement due to conflict in southern areas should be observed.
* **Support to agricultural and fisheries sectors:** to households to promote production during period of favourable conditions. This is to ensure food availability during seasons of no production. It should offer a leaf to communities/households after periods of droughts and floods to re-enter production by availing the required inputs. Promotion of effective food storage at household level need to be supported. In the southern areas and northwest where agricultural activities taken place, promotion of sustainable irrigation systems and water harvesting for cultivation can be promoted. In coastal fishing areas, support with fishing equipment and storage facilities could enable fishermen store their stock for sale during seasons of food insecurity. This will not only earn them income during periods of food insecurity but will also promote the availability of high protein foods for areas facing reduced food availability such as during droughts.
* **Livestock vaccination and water development:** enhance the protection of livestock asset during periods of vulnerability by supporting vaccinations against diseases and pests especially associated with increased wetness. Water development and rehabilitation of existing structures for enhancing water availability during periods of drought will further boost the livestock sector and sustain food security.
* **Alternative livelihoods and technical skills:** vulnerable communities may be supported to build technical skills that allow them initiate alternative sources of livelihoods through employment or small-scale enterprises.
* **Strengthening the food Systems:** In energizing the vulnerable by the improving the performance of the various food systems thematic areas. With better performing food systems the livelihoods will have improved access to food, reduce malnutrition besides spurring smallholder productivity and income. This should be through the window of strengthening market performance and market information.
* **Environmental and natural resource management:** sensitise communities on proper management of natural resources, establishment of natural resource management institutions and policies, rehabilitation of degraded land and other measures that ensure environmental sustainability
* **Nutrition:** Populations in southern areas experience high level of malnutrition, while populations in central and northern areas experience medium level of malnutrition. Interventions geared towards prevention of malnutrition (wasting, micronutrient deficiencies or stunting), treatment of any type of malnutrition (MAM) or a combination of prevention and treatment are recommended. At the same time, seasonal nutrition preventive intervention during lean periods in areas with high exposure to natural shocks is also recommended. Given the lack of health facilities in the south, mobile clinics are critical for the provision of nutrition services.

The food and nutrition situation under this category suggests that there are other underlying factors causing malnutrition. Based on the Nutritional Causal Analysis (NCA) conducted in Belet Weyne riverine communities, Doolow pastoral communities and Baidoa agropastoral in 2015,[17] the following additional multi-sectorial interventions are recommended in these areas:

(i) increase access to basic health, nutrition and WASH services, particularly for women, infants and children;

(ii) strengthen integration between basic health, nutrition, and WASH programmes and services;

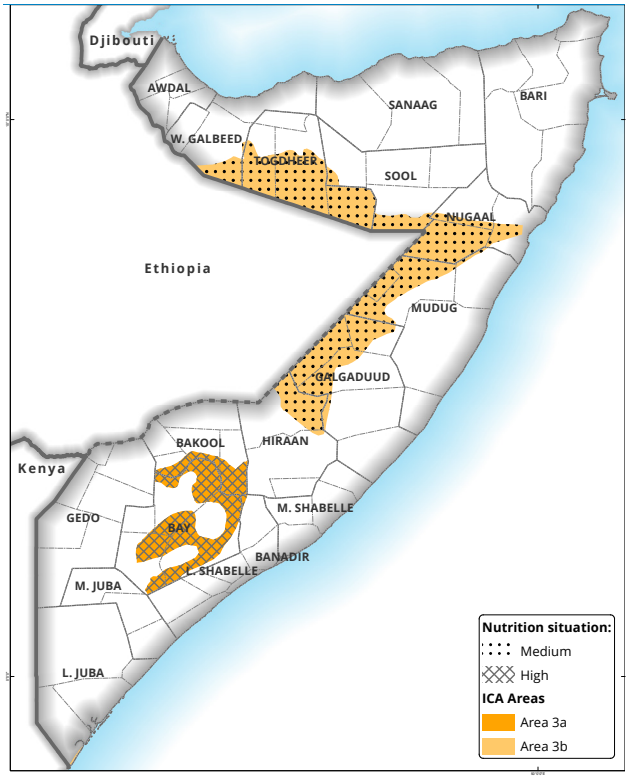
(iii) address gaps in access to safe water, hygiene and sanitation;

(iv) address related poor behaviour and questionable community norms through long-term social and behavioural change initiatives;

(v) improve nutrition, WASH, and related knowledge and awareness amongst pastoralist leaders, Community Health Workers (CHWs), Traditional Birth Attendants (TBAs) and others as feasible; and

(vi) use all opportunities to strengthen awareness and knowledge on basic health, nutrition and hygiene.

ICA category 3: Long-term programmes to address food insecurity



Locations in category 3 have high or moderate levels of recurrent food insecurity (crisis and emergency) coupled with relatively low natural shock risk.

Year-round protective livelihoods and safety nets is ideal for ICA area 3a, whereas in ICA area 3b, livelihoods, flexible safety nets, or livelihood recovery/protection programmes would be more relevant

Level Natural shock	Recurrence of Food Insecurity		
	LOW	MEDIUM	HIGH
LOW	Area 5	Area 3b	Area 3a
MEDIUM	Area 4b	Area 2b	Area 1b
HIGH	Area 4a	Area 2a	Area 1a

17 Nutritional Causal Analysis in South and Central Somalia, SNS consortium https://www.wfp.org/sites/default/files/SNS%20NCA%20LD.pdf

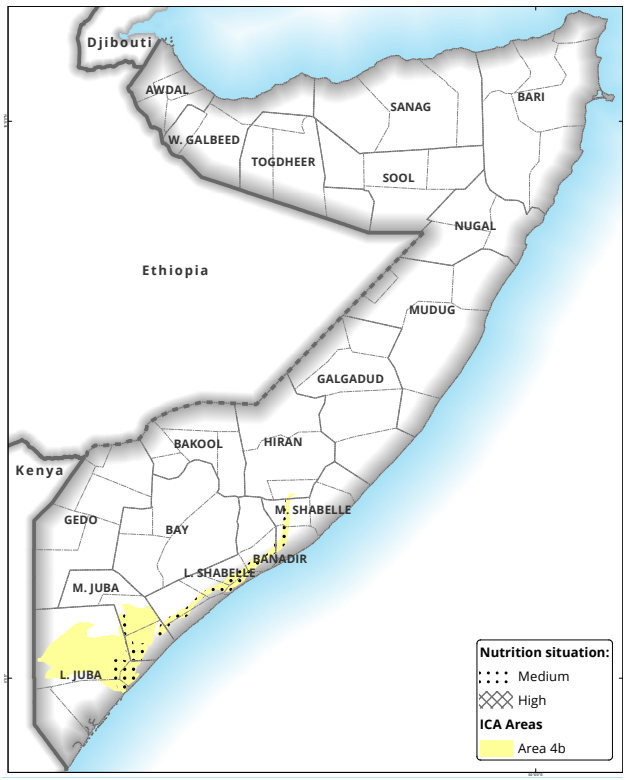
ICA category 3 comprises the Bay-Bakool Low Potential Agropastoral and Hawd Pastoral livelihood zones. Both food insecurity and exposure to shocks are moderate or low but malnutrition is high in Bay-Bakool Low Potential zone. Populations in these zones would benefit from **longer-term food programmes** to reduce food insecurity and promote development through predictable social protection and productive safety nets geared towards strengthening and improving livelihoods and safeguarding development efforts. Where relevant, early warning and actions to strengthen resilience may be valuable. The possible interventions may include:

* **Safety nets and livelihoods support programmes:** There is a significant difference between livelihood zones in ICA areas 3a and 3b. While interventions in ICA area 3a should gear towards consistent and predictable support throughout the year (similar to category 1), interventions in ICA area 3b should focus on seasonal safety nets (similar to category 2).
* **Early warning and preparedness:** This would include monitoring of possible risk drivers with seasonal developments and issuance of preventive warnings for deviations from current risk trends.
* **Supporting markets:** to avail food at reasonably fair prices that will allow households access food. This should go alongside infrastructure development and information for awareness to allow households and communities take advantage of markets to sell and purchase.
* **Skills support to farmers:** improve the households (agricultural and livestock) skills in production and management of the production systems for improved production. Farm to markets initiatives should be strengthened where situation can allow. This should include diversification in production using drought tolerant crop varieties.
* **Water development:** for livestock and agricultural development
* **Environmental protection and rehabilitation:** to enhance rangeland production for livestock as well as soil fertility maintenance in agricultural areas.
* **Nutrition**: Interventions geared towards prevention of malnutrition, treatment of MAM or a combination of prevention and treatment are recommended.

Particularly in Baidoa agropastoral additional interventions are suggested based on the 2015 NCA:

(i) improve of caregivers' basic knowledge about nutrition through Infant and Young Child Feeding (IYCF) promotion;
(ii) establish of long-term behavioural and social change communication programmes;
(iii) work closely with CHWs, TBAs and others regularly consulted by local communities when official health services remain largely inaccessible;
(iv) explore opportunities to support local communities with farming resources and training; and
(v) improve availability of and access to veterinary services and appropriate livestock drugs.

ICA category 4: Broader Disaster Risk Reduction



Locations in category 4 have low levels of recurrent food insecurity (crisis and emergency) coupled with high and medium natural shock risk.

Whilst evidence does not support widespread food security focused interventions, broad DRR (including infrastructure improvement as well as early warning and disaster preparedness) is a priority. More so, attention to land degradation and/or other core lenses given that these could worsen future shocks, potentially affecting food security.

Level Natural shock	Recurrence of Food Insecurity		
	LOW	MEDIUM	HIGH
LOW	Area 5	Area 3b	Area 3a
MEDIUM	**Area 4b**	Area 2b	Area 1b
HIGH	**Area 4a**	Area 2a	Area 1a

ICA category 4 comprises the Juba cattle pastoral livelihood zone and riverine gravity irrigation livelihood zone of Shabelle region.

Although vulnerability to food insecurity is relatively in these livelihoods, key innervations aimed at improvement to food security for the most vulnerable populations residing in informal settlements or remote zones will still be suitable. In addition, a broad approach for DDR for each identified hazard that combines long-term measures to reduce risk with early warning and disaster preparedness systems. The possible interventions may include:

* **Early warning and disaster risk reduction:** In protecting the gains and reducing the likelihood of loss from future hazardous events that might affect the existing gains and set back progress an effective system is required. This includes physical measures to reduce risks and interventions geared towards strengthening early warning systems for flood and drought monitoring. Furthermore, population movement especially from conflict and drought requires keen observation.
* **Modernising production** by use of emerging technologies to increase productivity and income, strengthening the food system value chains, establishing small-scale processing industries for value addition of both livestock and agricultural products.
* **Devise strategic plans** for motivating investment in agricultural and livestock sectors
* **Promote sustainable development programmes** targeting the main sectors of production
* **Long-term infrastructure development** to facilitate development
* **Peace building** to allow communities in such location take advantage of the prevailing situation to increase production for market thereby giving them an option to earn income.
* **Nutrition:** Given the high levels of malnutrition in the south, even though the livelihood zone of Juba cattle pastoral does not have sufficient nutrition data. Recommended interventions

geared towards the prevention of malnutrition and treatment of any forms of malnutrition or a combination of both. At the same time, seasonal nutrition preventive intervention during lean periods in areas with high exposure to natural shocks. Given the lack of or limited health facilities in the southern Somalia, mobile facilities are critical for service provision.

* **Food systems:** In energizing the vulnerable by the improving the performance of the various food systems thematic areas. With better performing food systems the livelihoods will have improved access to food, reduce malnutrition besides spurring smallholder productivity and income. In addition to food systems, long-term physical infrastructure measures are required. This will stabilize livelihoods besides reversing land degradation.

Data Sources

Administrative boundaries

Unit: Region and district
File format: Shapefile
Agency: UNDP, WFP, GEONAMES

Nutrition

Indicator: Nutrition ICA lenses
File format: excel spreadsheet
Agency: FSNAU
Timespan: 2012–2017

Livelihood boundaries

Unit of analysis: Livelihood zone
File format: Shapefile
Agency: FEWS NET and FSNAU
Source: http://fews.net/east-africa/somalia/livelihood-zone-map/august-2015

Population figures

Indicator: Population estimates
File format: excel spreadsheet and shapefiles
Agency: UNFPA, LandScan
Timespan: 2014 & 2015
Source: https://landscan.ornl.gov/

Food Insecurity

Indicator: Core food security analysis
File format: excel spreadsheet
Agency: FSNAU
Timespan: 2012–2017
Source: http://www.fsnau.org/ipc/population-table

Settlement/ villages

Indicator: locations for people
File format: Shapefile and spreadsheets
Agency: WFP & UNOCHA

Floods

Indicator: Flood hazard index
File format: Gridded shapefile and reports
Agency: FAO - SWALIM
Timespan: 2002–2006, 2017

Markets and Livestock

Indicator: Context information
File format: Reports, databases and spreadsheet
Agency: WFP, FSNAU, FSC- Somalia & FEWSNET
Timespan: 2012–2017
Source: http://fews.net/east-africa/somalia/
http://www.fsnau.org/ids/index.php

Drought

Indicator: Drought hazard index
File format: Gridded shapefile
Agency: Chirps 2.0
Timespan: 1998–2017
Source: http://chg.geog.ucsb.edu/data/index.html

Location accessibility model

Indicator: Context information for markets
File format: Gridded shapefile
Agency: WFP

Land degradation

Indicator: land-use change
File format: Gridded shapefile
Agency: RCMRD/MESA
Timespan: 2005–2014

Conflict

Indicator: Context information
File format: Excel spreadsheet
Agency: ACLED, The Aid Worker Security Database
Timespan: 1997–2018
Sources: https://www.acleddata.com/data/
https://aidworkersecurity.org/

NDVI

Indicator: Drought hazard index
File format: Gridded shapefile
Agency: eMODIS
Timespan: 1998–2017
Source: https://lta.cr.usgs.gov/emodis

Population displacement

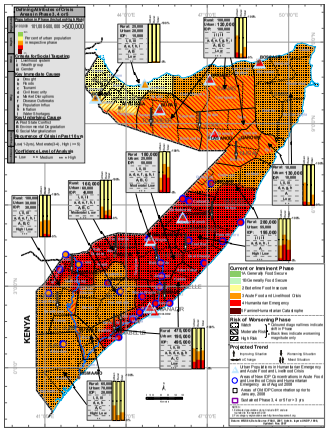
Indicator: Context information on population movement
File format: Spreadsheet
Agency: UNHCR
Timespan: 2012–2017

Annexes

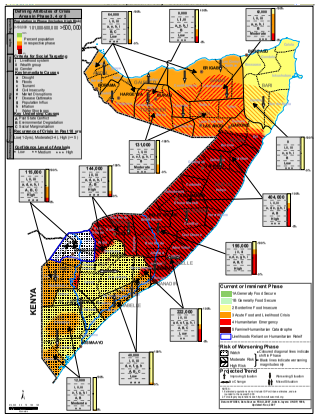
Annex I: Food insecurity trend by seasons *gu* and *deyr*, 2008–2017

Gu 2008–2017

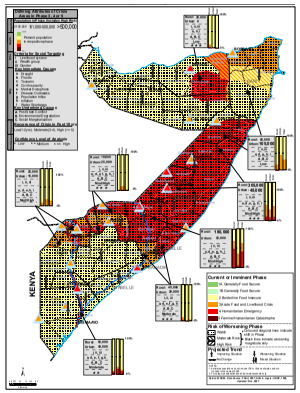
Gu 2008



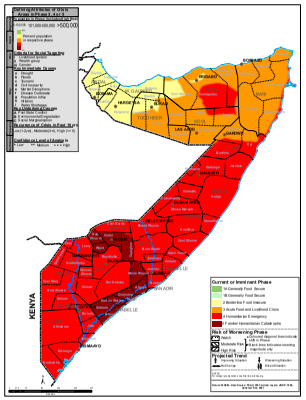
Gu 2009



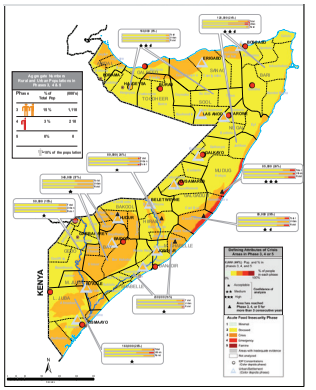
Gu 2010



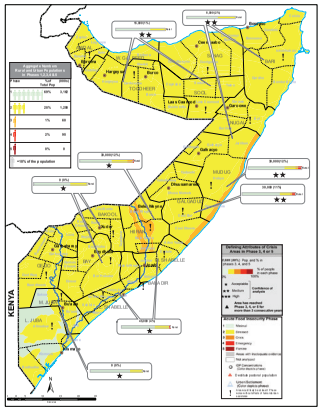
Gu 2011



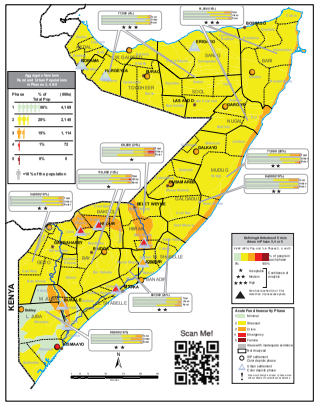
Gu 2012



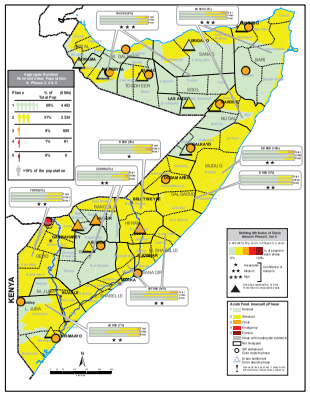
Gu 2013



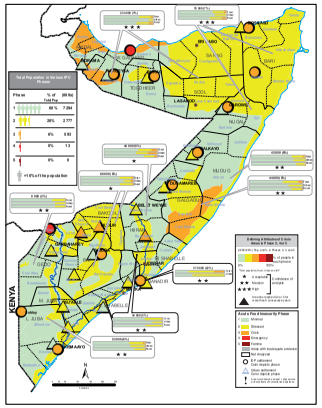
Gu 2014



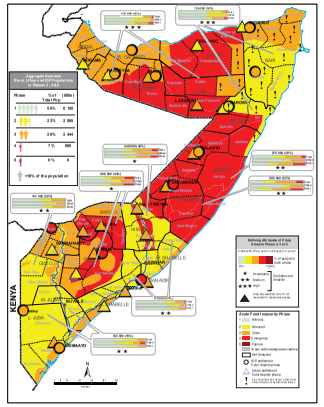
Gu 2015



Gu 2016



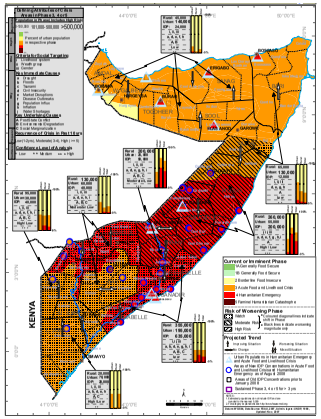
Gu 2017



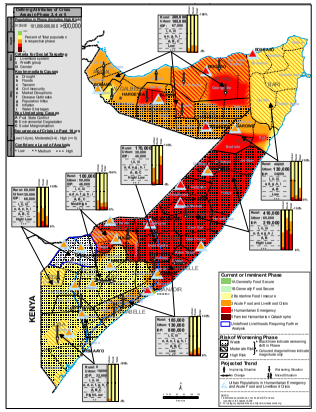
NB: High resolution maps can be obtained from FSNAU (http://www.fsnau.org/ipc/ipc-map)

Deyr 2008–2017

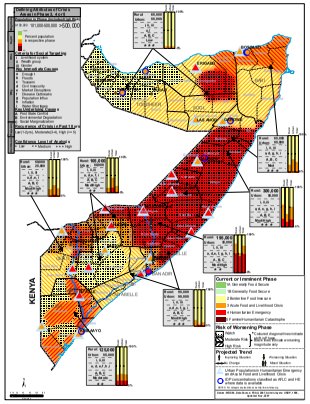
Deyr 2008



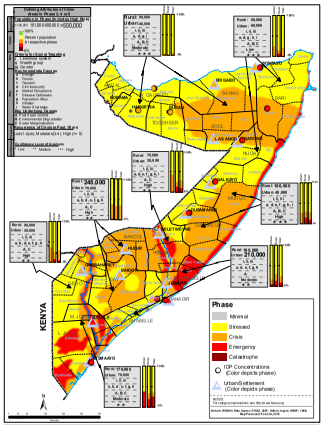
Deyr 2009



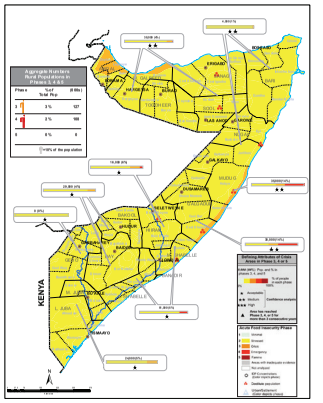
Deyr 2010



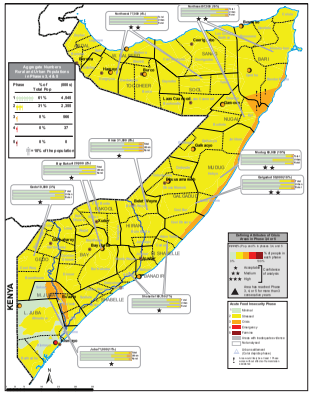
Deyr 2011



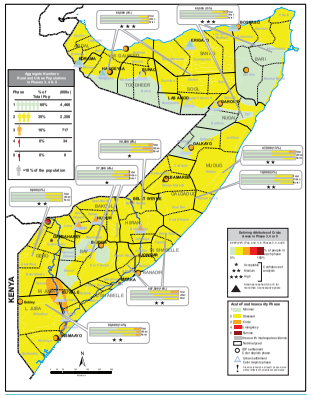
Deyr 2012



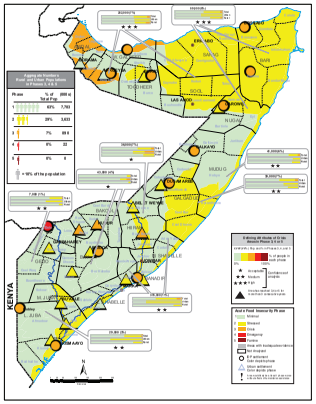
Deyr 2013



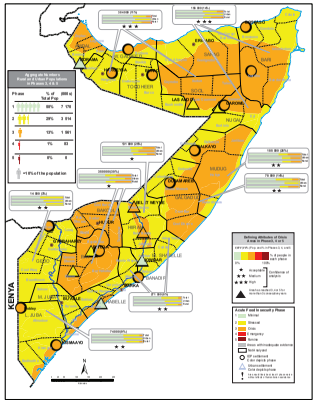
Deyr 2014



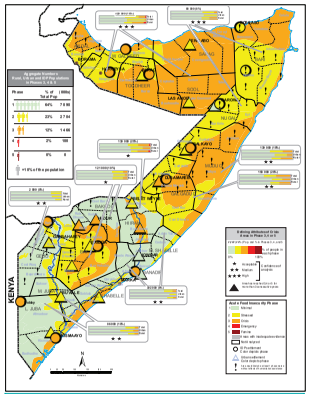
Deyr 2015



Deyr 2016



Deyr 2017

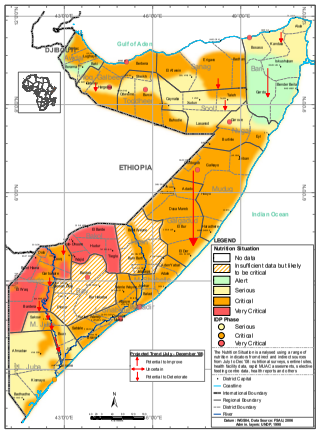


NB: High resolution maps can be obtained from FSNAU (http://www.fsnau.org/ipc/ipc-map)

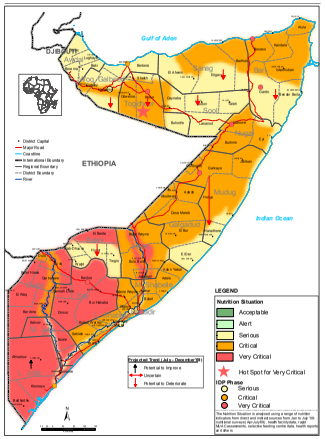
Annex II: Nutrition insecurity trend by seasons *gu* and *deyr*, 2008–2017

Gu 2008–2017 (Nutrition)

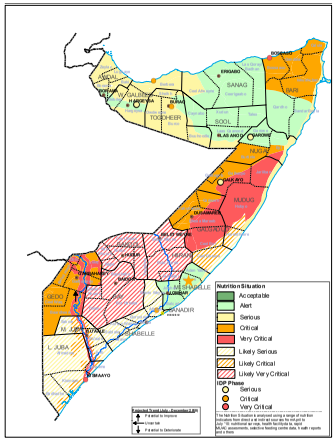
Gu 2008



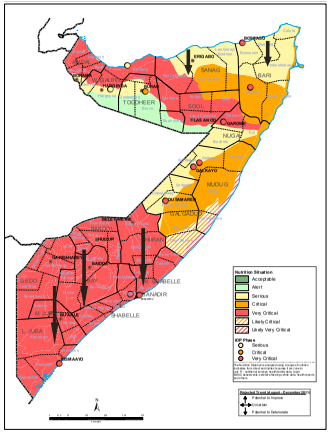
Gu 2009



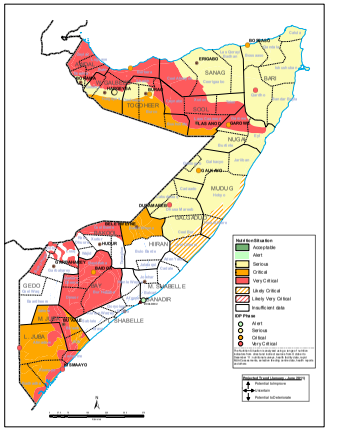
Gu 2010



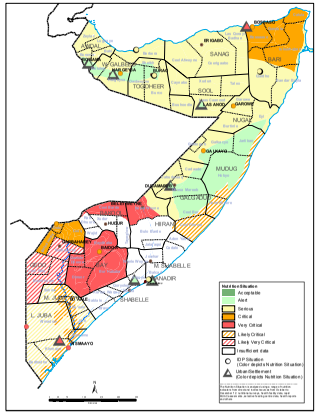
Gu 2011



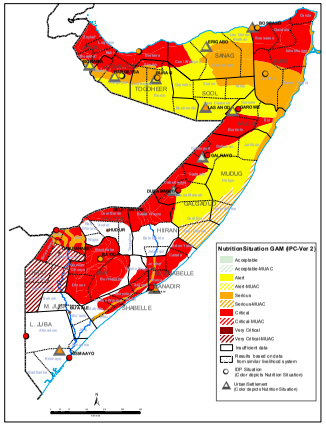
Gu 2012



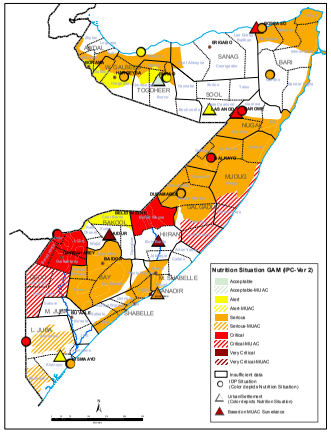
Gu 2013



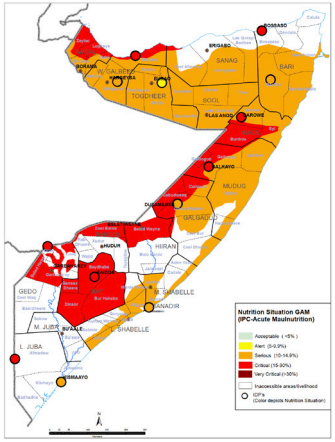
Gu 2014



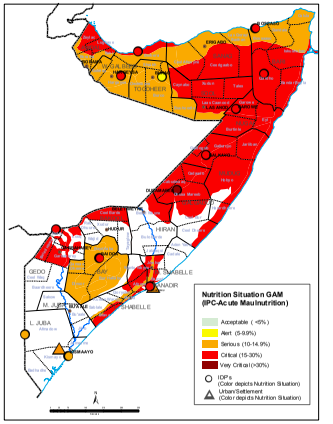
Gu 2015



Gu 2016



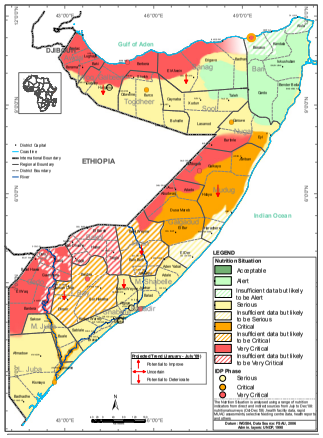
Gu 2017



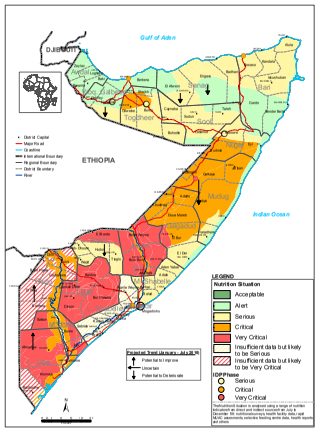
NB: High resolution maps can be obtained from FSNAU (http://www.fsnau.org/products/maps/nutrition-situation-maps)

Deyr 2008–2017 (Nutrition)

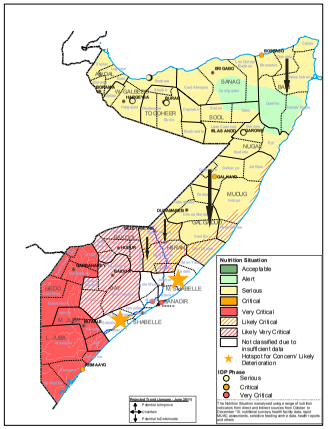
Deyr 2008



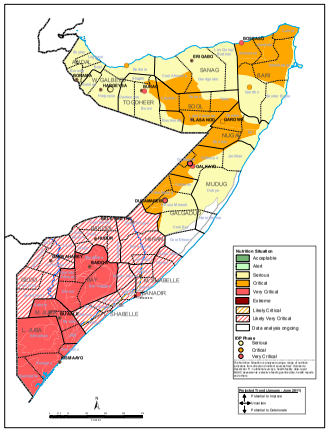
Deyr 2009



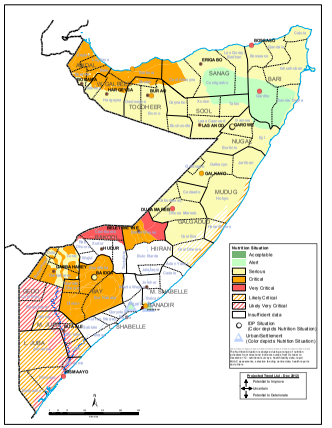
Deyr 2010



Deyr 2011



Deyr 2012



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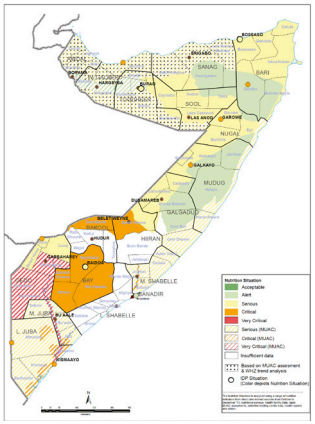
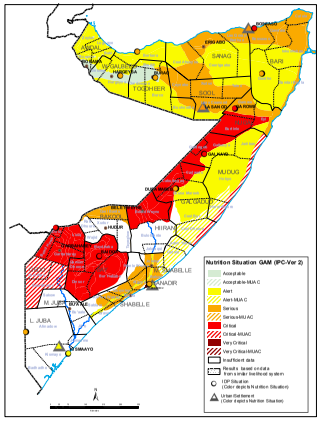
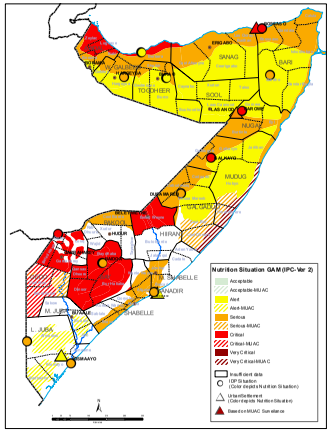


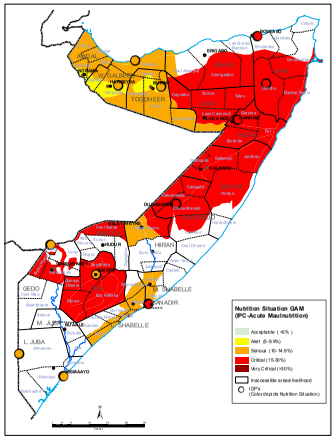
Deyr 2014



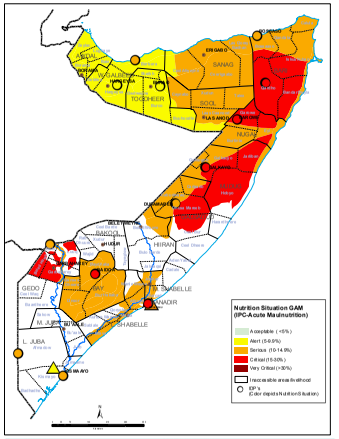
Deyr 2015



Deyr 2016

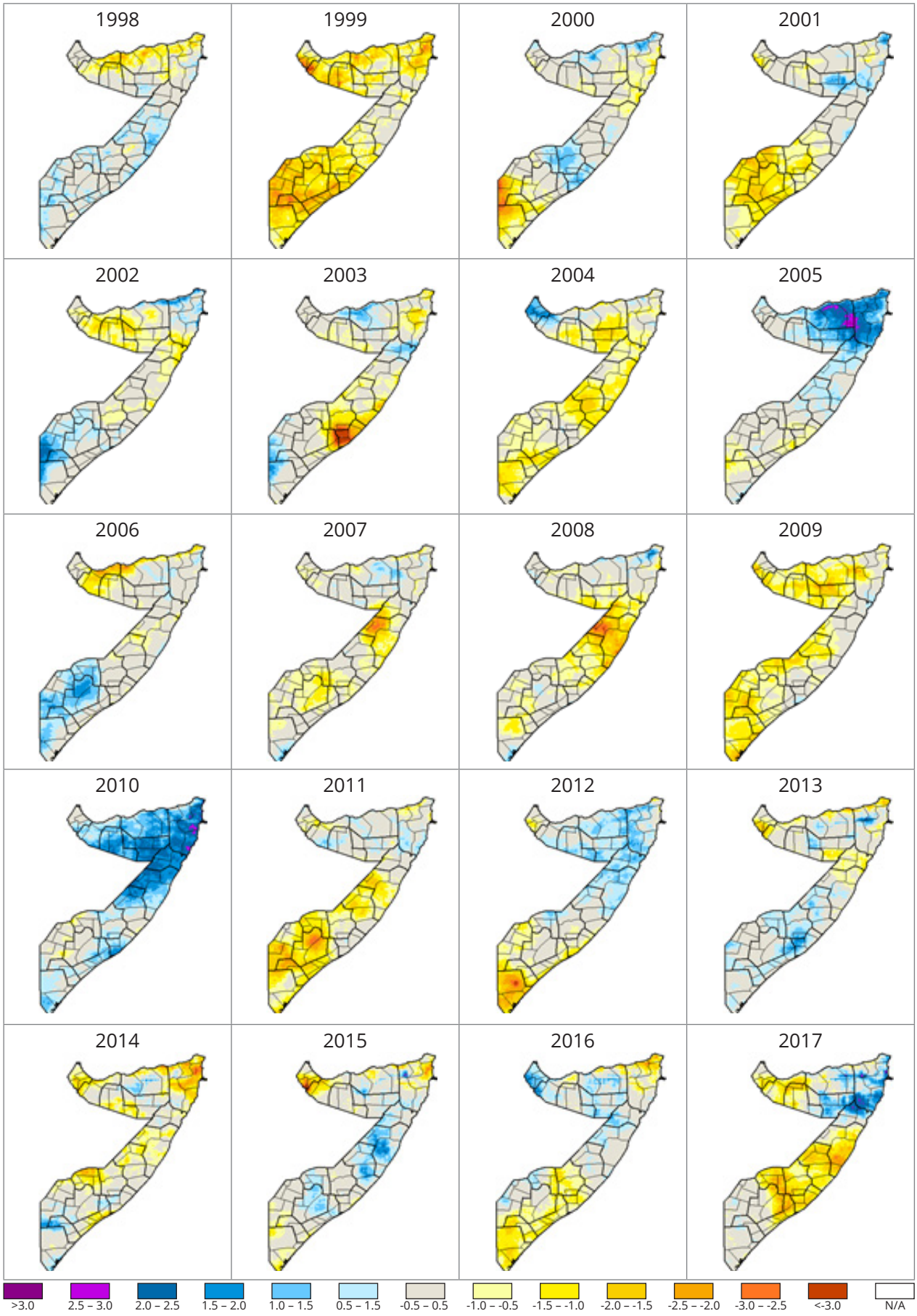


Deyr 2017

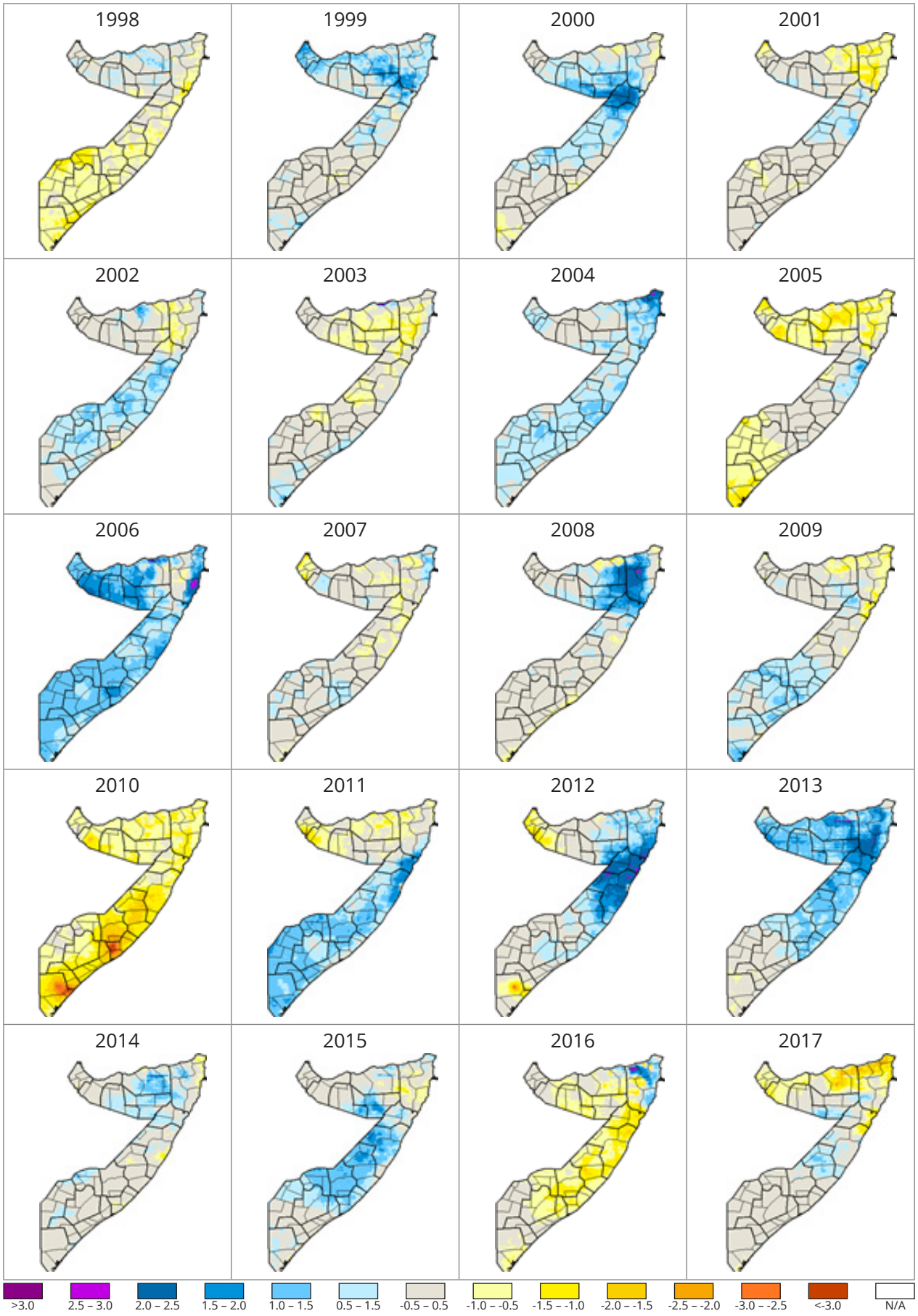


NB: High resolution maps can be obtained from FSNAU (http://www.fsnau.org/products/maps/nutrition-situation-maps)

Annex III: Meteorological drought incidences over April–June (*Gu*), 1998–2017



Meteorological drought incidences over Oct–Dec (*Deyr*), 1998–2017



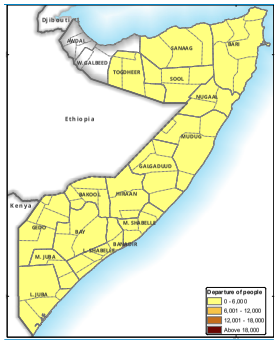
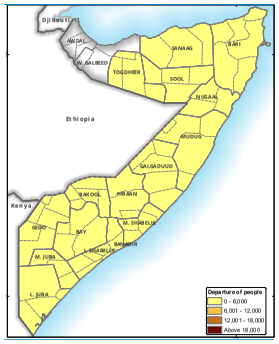
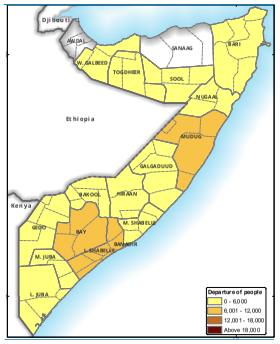
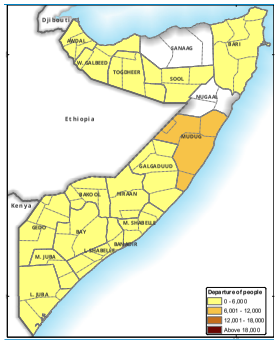
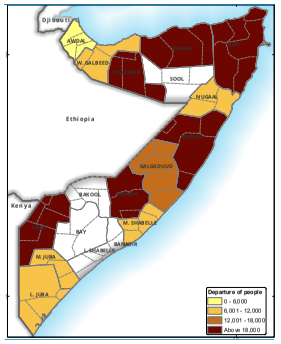
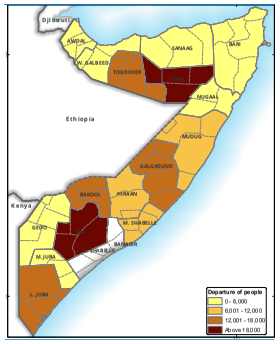
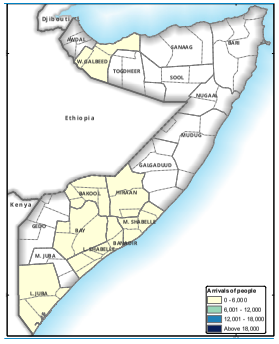
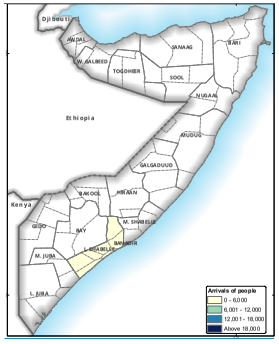
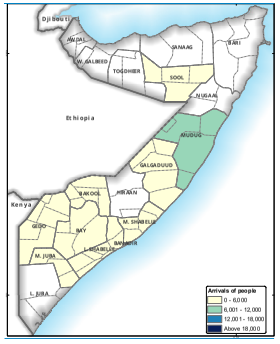
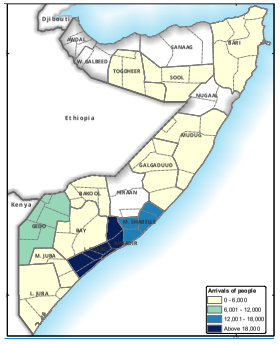
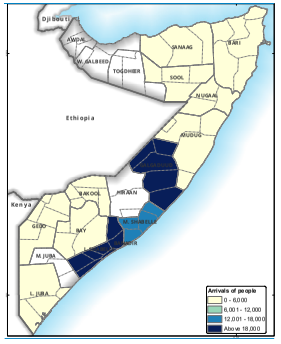
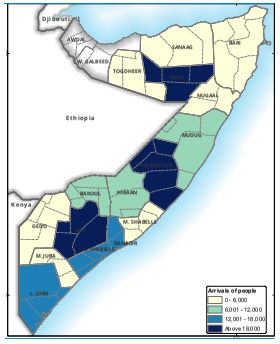
Annex IV: Group work discussion for programme implications at SKA Mogadishu on 9th Dec 2019

ICA Category	Group	Type of policy / intervention	Suggestions for Interventions (including resilience building)
Category 1 High food insecurity with High natural shocks	1	Emergency	• Provide food support • Health and WASH support • Make sure early warning systems and preparedness both agriculture, fisheries and livestock areas • Provide all necessary awareness
	2		• Job creation • Restocking for livestock • Vocational training and skills (related to fishing and livestock) • Provide fishing equipment and storage
	3		• Food aid • Water distribution • Emergency health support • Livestock re-stocking (restoring livestock – given herds) • Land preparation and seed distribution • Distribution fishery materials • Awareness
	4		• Prepare emergency response plans (Food distribution, provide basic medicine, shelter, WASH programme) • Early warning systems and preparedness • Establishing storage (Grain storage) • Building resilience programme
Category 2 Seasonal food insecurity with High and medium exposure to natural shocks	1	Emergency and recovery	• Provide fishing boats, cold chains, nets • Provide agriculture materials • Seeds • Cannel rehabilitation
	2		• Employment creation • Material for agricultural production, and livestock and fishery production • Providing support for the farmers such as farming tools and storage • Modernization for the farming system • Creation of water reservoirs for irrigation and animals • Emergency support from the government
	3		• Agricultural input support • Livestock vaccination and treatment • Digging wells and dams • Irrigation infrastructure • Market • River/ cannel rehabilitation • Early warning
	4		• Early warning systems • Provide environmental awareness programme and NRM

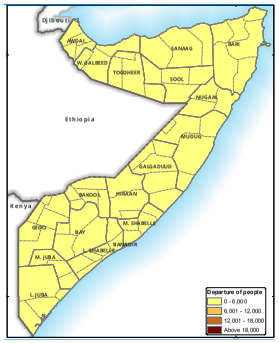
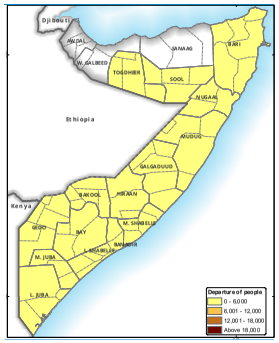
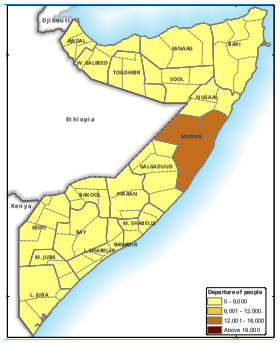
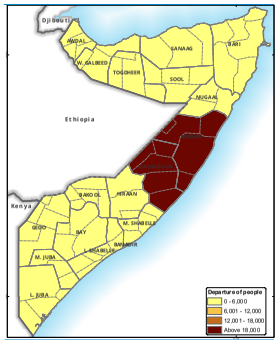
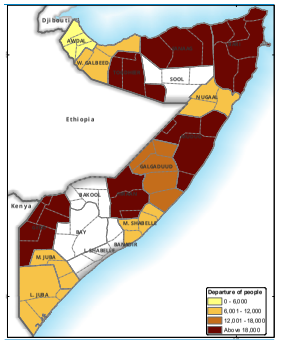
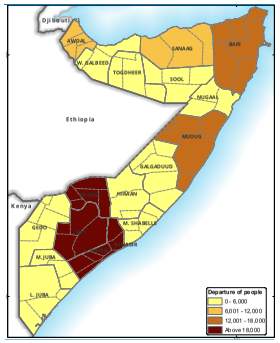
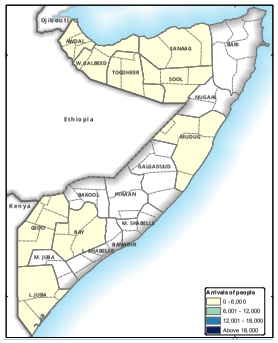
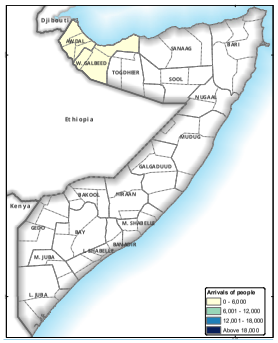
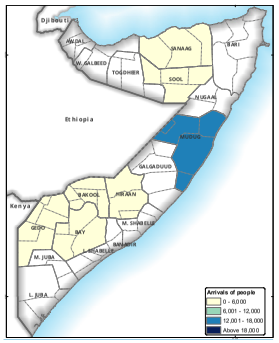
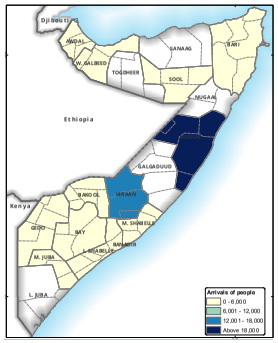
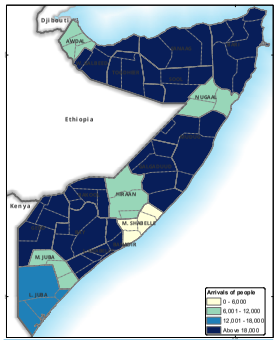
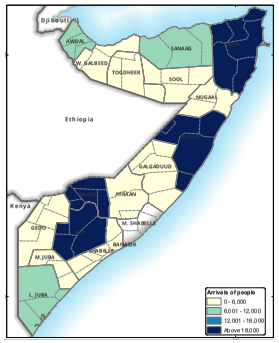
Category 3 High food insecurity with Low exposure to natural shocks	1	Recovery	• Create market • Good infrastructure • Storage for agricultural aspect
	2		• Skills development for the farmers • Range land for future use of livestock • Social protection • Re-stocking of livestock
	3		• Digging wells • Water catchment • Farm diversity • Pasture development
	4		• Provide peace building programme • Promote good governance and land making • Safety nets and livelihood programme • Extension and public educations; awareness
Category 4 Low food insecurity with High or Medium exposure to natural shocks	1	Recovery and development	• Utilize technology (modern technology and skills for agriculture) • Small factory • Fishing port • Motivate trade both local and international (investment for all agricultural aspect)
	2		• A larger future investment to promote economy • Development of infrastructure • Education (to all including school and the elderly) • Promotion of the country health systems • Building human capital • Preparedness, early warning on natural disasters
	3		• Awareness • Agricultural input support • Irrigation and market development • Capacity building
	4		• Infrastructure improvement • Early warning and disaster preparedness • Supporting sustainable programmes • Increase agricultural and livestock productions • Environmental awareness programme (develop policy and frameworks that protects environment)

Annex V: Population Movement for Somalia (departure and arrivals), 2013 – 2018

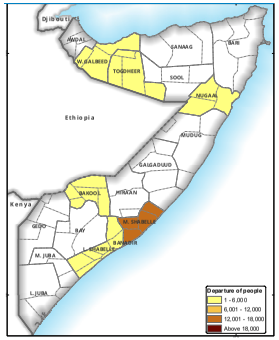
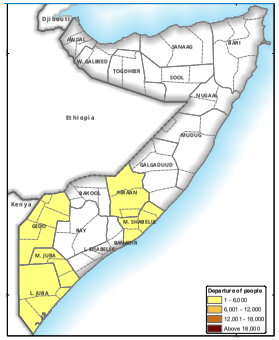
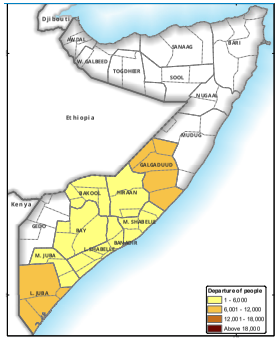
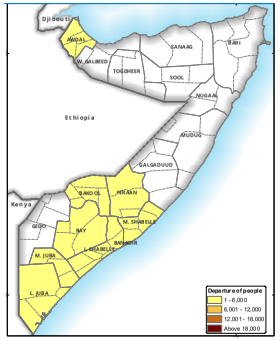
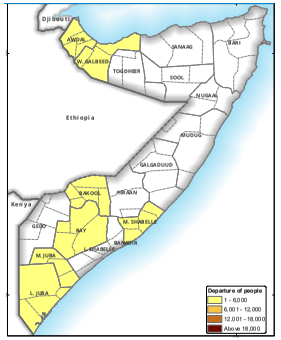
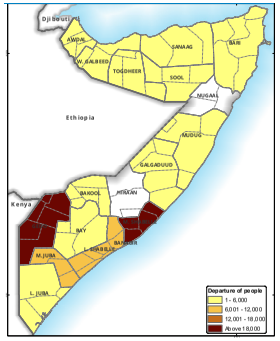
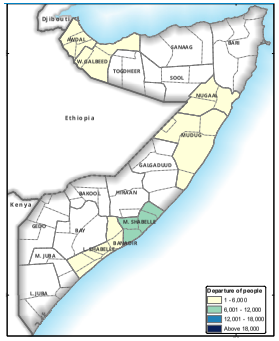
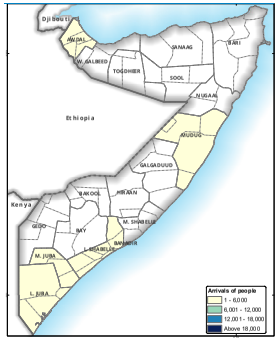
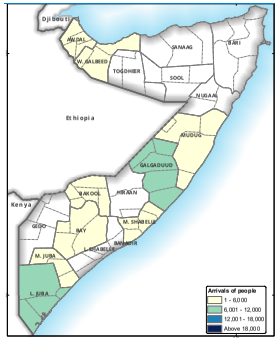
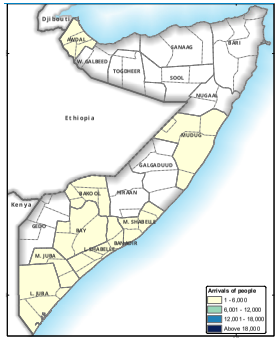
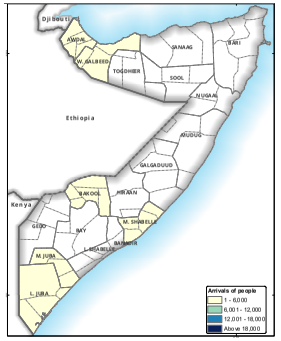
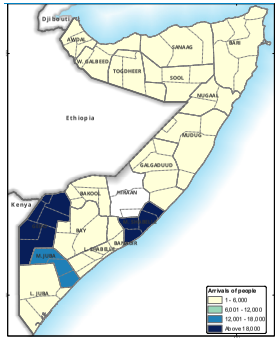
Conflict

2013 Departures	2014 Departures	2015 Departures	2016 Departures	2017 Departures	2018 Departures
					
2013 Arrivals	**2014 Arrivals**	**2015 Arrivals**	**2016 Arrivals**	**2017 Arrivals**	**2018 Arrivals**
					

Drought

2013 Departures	2014 Departures	2015 Departures	2016 Departures	2017 Departures	2018 Departures
					
2013 Arrivals	2014 Arrivals	2015 Arrivals	2016 Arrivals	2017 Arrivals	2018 Arrivals
					

Floods

2013 Departures	2014 Departures	2015 Departures	2016 Departures	2017 Departures	2018 Departures
					
2013 Arrivals	**2014 Arrivals**	**2015 Arrivals**	**2016 Arrivals**	**2017 Arrivals**	**2018 Arrivals**
					

Annex VI: Somalia Livelihood Zone Map