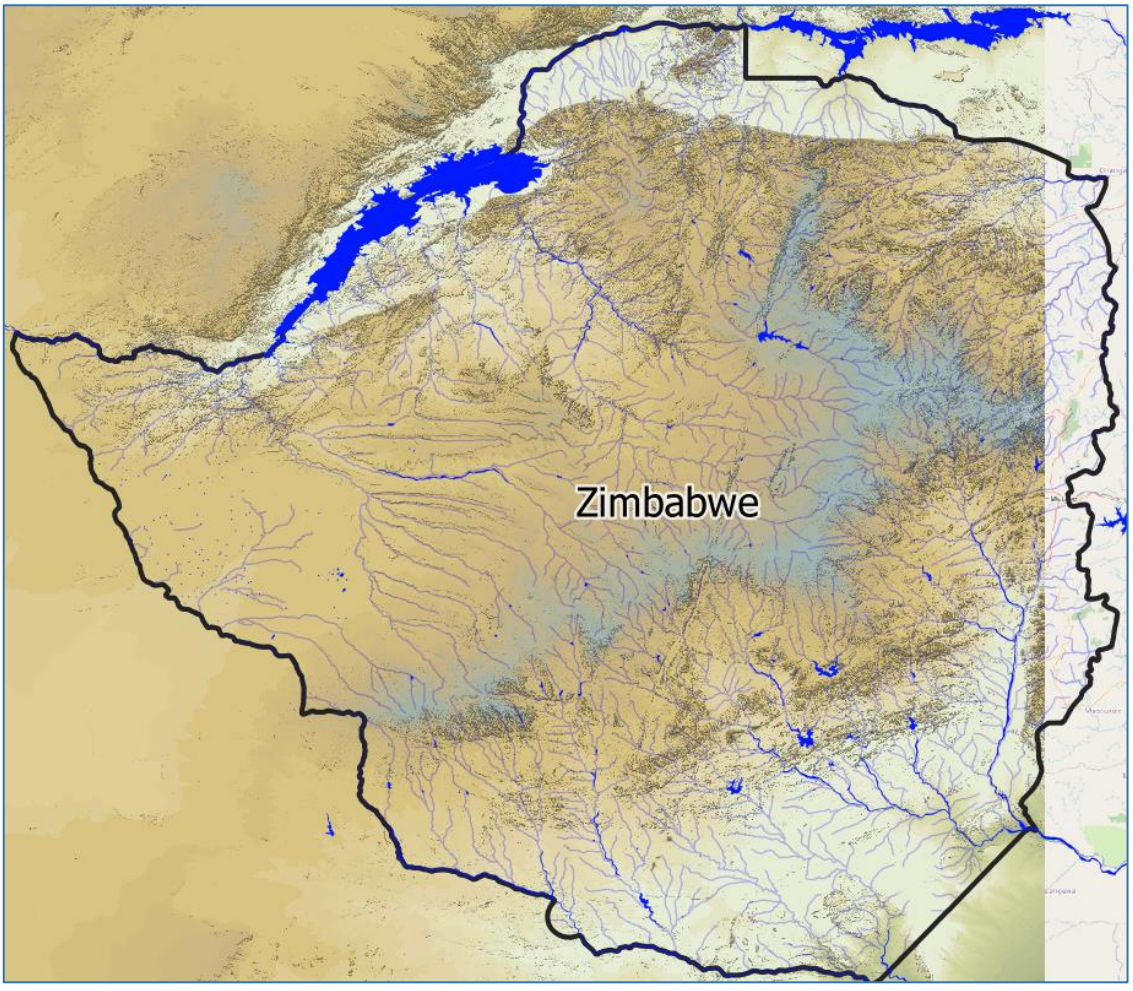
Integrated Context Analysis (ICA)

ZIMBABWE (JUNE 2021)



Contents

1 ICA Overview

The Integrated Context Analysis (ICA) is the first of **three tools** that inform a **three-pronged approach (3PA)** to **integrated programming**. The 3PA comprises a national level, data-driven context analysis (the ICA) which guides in positioning broad programme strategies around the country, and flags where discussions with sub-national and community representatives could be undertaken to create accurate **seasonal livelihood calendars** (Seasonal Livelihood Programme (SLPs)) that capture common practices, shocks and stressors to inform specific activities and interventions at sub-nation/ District level. SLPs can then suggest participatory discussions with specific communities and local authorities to help refine local development plans.

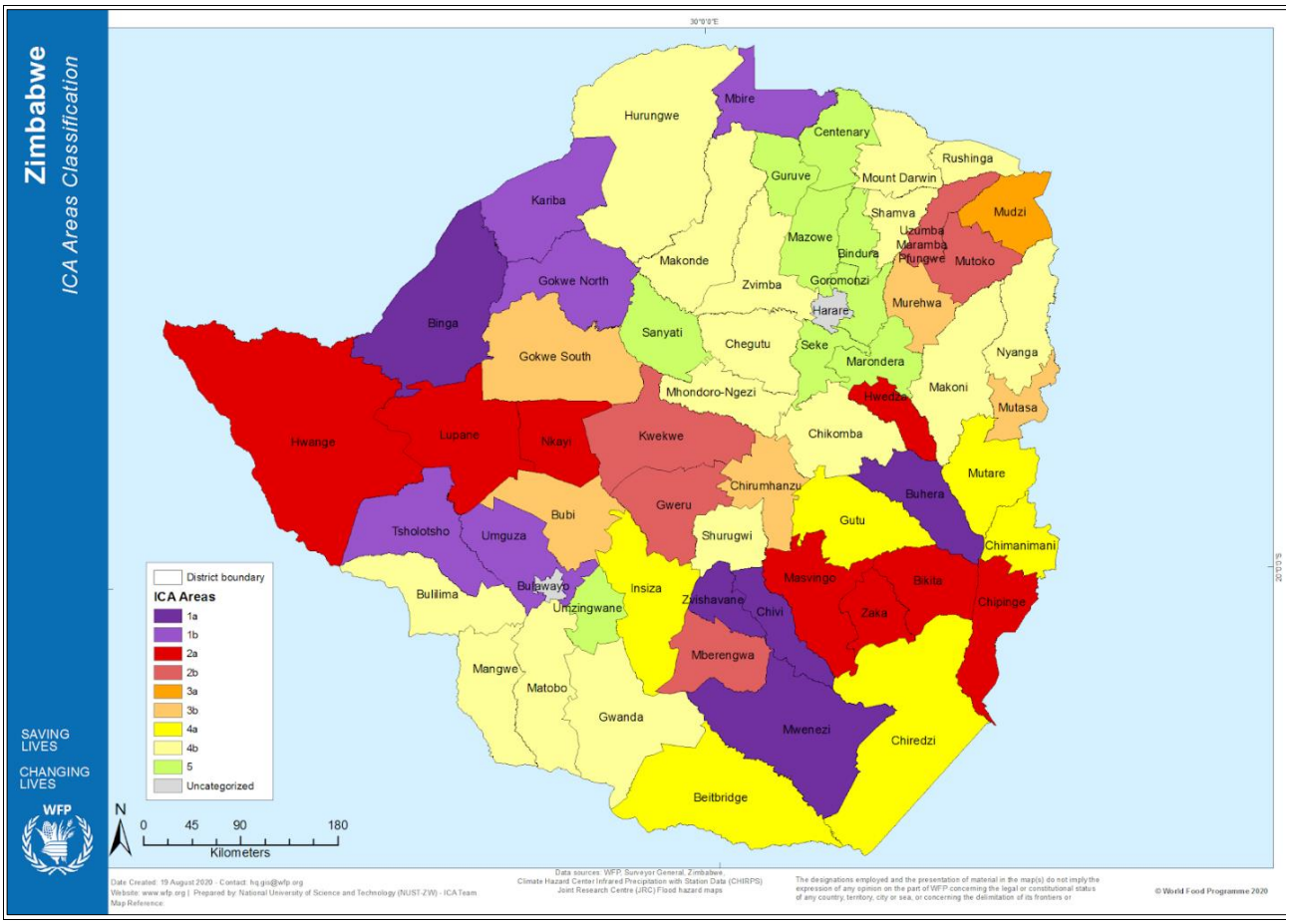
This ICA classifies and colour-codes the **Districts** of **ZIMBABWE** based on whether they have historically experienced high, medium or low levels of food insecurity and/or natural hazards. This provides evidence to support discussions around where, and for how long, preparedness, disaster risk reduction, social protection and market access efforts could be most appropriate in meeting the needs of the most vulnerable and food insecure populations.

This ICA was completed in **JUNE 2021** under the leadership of the World Food Programme**,** in collaboration with government stakeholders and the technical support and guidance of the National University of Science and Technology**.**

At the outset of the exercise, the main stakeholders discussed and agreed on expectations and priorities of the ICA. In brief, these are related to: identification of broad national programmatic strategies; the possibility of its use as an advocacy tool to influence policy; and indication of hot spots and areas needing further interrogation. The ICA presented an opportunity to stakeholders to look at issues differently. The processes were very valuable as they challenged data management and stakeholders noted gaps and value of certain data. The ICA mapped high risk areas based on the recurrence of natural shocks and food insecurity levels.

The maps and tables in this **Overview** section *summarise* the ICA results and recommendations for an initial reading. The sections that follow elaborate on detailed **thematic findings**, general **policy recommendations**, general **programme recommendations** for more detailed discussions and decision-making, and **technical annexes** and data tables.

Map 1: ICA Area Map



Each colour on Map 1 corresponds to one of the nine **ICA Areas**. Table 1 describes the levels of food insecurity and natural shocks that define each ICA area. Furthermore, the description highlights what people living in those areas are likely to experience on a regular or recurring basis, and possibly suggests general programmatic recommendations that can be considered in each. Map 2 illustrates how the priority programme strategies are distributed across the country as a result of the ICA.

Map 2: Broad programme strategies based on ICA Areas

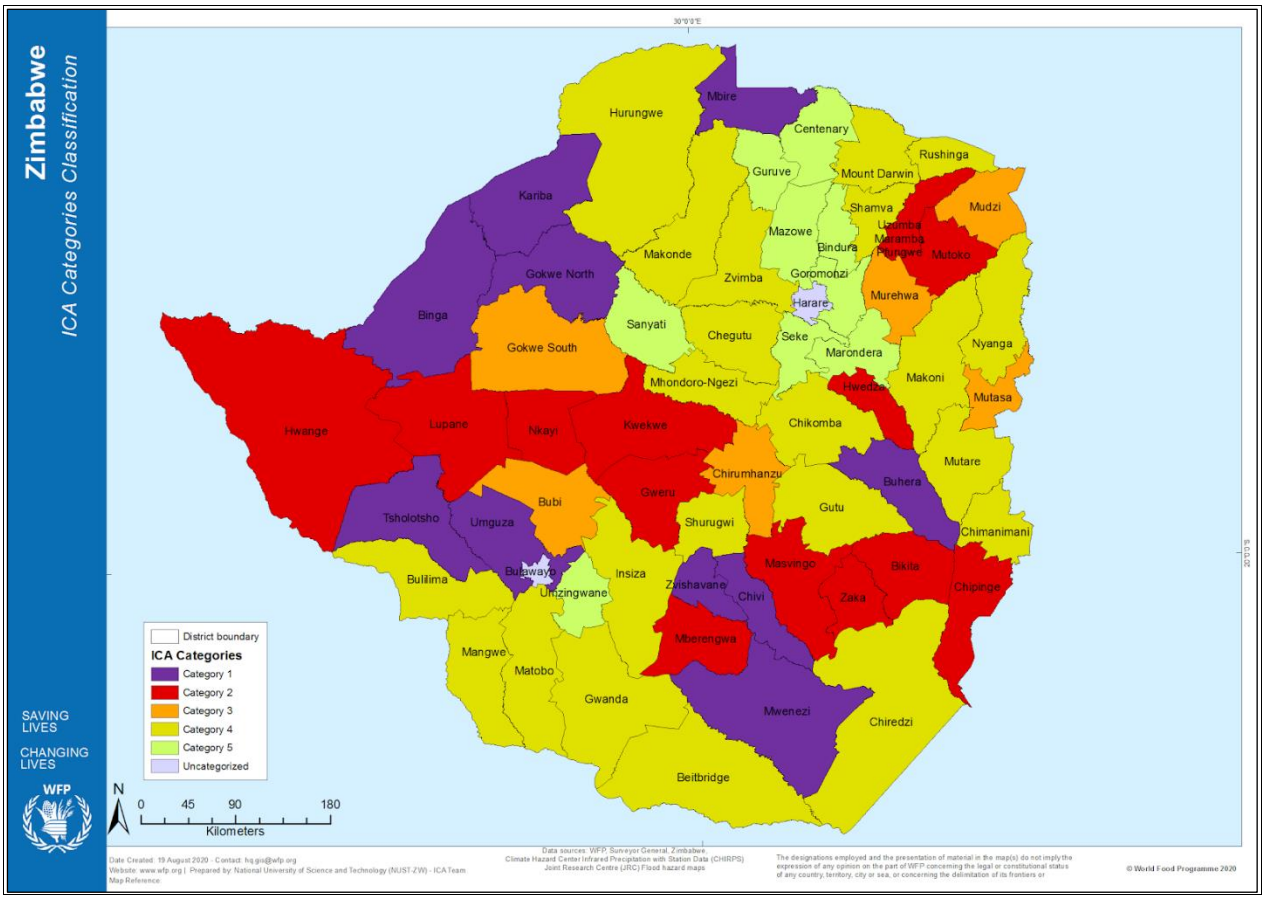


Table 1: Overview of ICA area broad recommendations

Food insecurity	Shock trend	AREA	Broad programme strategies – potential focus by ICA area			
			Preparedness	**Disaster risk reduction**	**Social Protection**	**Market access**
Large segments of the population are persistently food insecure, and many additional households are on the brink, regularly falling in and out recurring food insecurity.						
High	High	1A	X	X	X	X
High	Medium	1B	X	X	X	X
High	Low	3A		X	X	
The majority are food secure but ill equipped to face unexpected, important shocks. Somewhat higher numbers face persistent food insecurity, and many others are on the brink, falling in and out of food insecurity occasionally.						
Medium	High	2A		X	X	
Medium	Medium	2B		X	X	
Medium	Low	3B		X	X	
The majority are food secure and either resilient or rarely exposed to shocks. Contained numbers face persistent food insecurity and contained numbers are on the brink.						
Low	High	4A	X	X		
Low	Medium	4B		X		
Low	Low	5		X		

Table 2: Overview of ICA area broad recommendations for Land degradation

Food insecurity	Shock trend	AREA	Land degradation strategies		
			High	Medium	Low
High	High	1A	X		
High	Medium	1B		X	
High	Low	3A			X
Medium	High	2A	X		
Medium	Medium	2B			X
Medium	Low	3B			
Low	High	4A			X
Low	Medium	4B			X
Low	Low	5			

Longer-term programme planning requires an indication of the number of people who are likely to require assistance. The ICA summarises planning estimates (rounded up) as follows:

Table 3: Planning estimates: number of food insecure

Scope	Description	Number
Long-term planning	Average number of food insecure people in the last 5 Years	**3,162,616**
Most vulnerable	*Of the above*, estimated number of consistently food insecure people	**1, 681, 083**
Preparedness planning	*In addition to the above,* number of food insecure in the event of a shock	**1,562,694**

Note: These figures were derived from the ZimVAC 5-year food insecurity data and are planning estimates. Actual numbers should be derived from emergency assessments in the event of a crisis and plans adjusted throughout the programming cycle based on assessment findings.

Findings from the ICA also highlight opportunities for policy level dialogue as follows:

Table 4: Policy recommendations

Sector / Topic	Recommendation	Supporting ICA evidence
Food Security	Updating and/ strengthen current food security policies/ regulatory provisions/ plans/ strategies to reflect contextually relevant climate-land degradation related considerations	Areas with high food insecurity (in ICA areas 1 and 2) are characterised by high-to moderate land degradation and climate shocks hence the need to strengthen consideration of these in policy updates to help strengthen more contextual resilience building.
Drought	Streamline water harvesting/conservation technologies so as to improve water utilization and management	Low exposure to drought in high rainfall areas does not mean the area is not vulnerable given the dominance of moisture sensitive livelihoods.
Floods	Standardized spatial data collection on cyclones must be incorporated into government policy such that a proper understanding of flood zones impacts and severity can help inform DRR.	Poor settlement patterns and flood data rarely captured.
Land Degradation	Integrate environmental rehabilitation objective and targets into relevant sectoral policies to help mitigate the impact of climate change and poor natural resources management practices on local livelihoods."	Eight-two percent (82%) of all districts had erosion propensity > 5 tons/ha per year indicating an urgent need to augment and focus environmental interventions with updated policy in this regard.

As a data-driven exercise, the ICA provides an overview of data availability and accessibility at national level. In addition to the above, while the current food security and nutrition policy context in the country is robust, the deepening levels

of food insecurity resulting from drought impacts could be a reflection of poor institutional arrangements with regard to implementing specific policy recommendations, hence the need to interrogate this factor to address organizational differences and strengthen resilience

Table 5: Landscape overview of data availability

Data situation	Sector, theme, topic	Comments and recommendations
Available, not accessible	Drought	Rainfall data should be made easily accessible to encourage more research on the issue. Currently one has to purchase the data from Meteorological Services at prohibitive prices. Opportunities can be exploited to partner for the development of localised PRISMS system/platform. WFP HQ can be engaged for such opportunities.
Available and accessible	Food security Floods Drought Land degradation	ZIMVAC data Joint Research Centre Normalized Difference Vegetation Index (NDVI), challenge government and other players to make rainfall data readily available and accessible. MODIS (NASA) which offers global coverage. Need to invest in local infrastructure to capture such data
Data available	Food security - household income, employment, gender of households.	Investment in data collection and management should be emphasized as this will influence organization to collaborate and for possible standardization of collection methodology. ZIMVAC data is collected for different purposes other than for the ICA, and also the mapping unit and sampling framework differ making it difficult to work with.

In addition to the above, the ICA suggests further investigation into the below:

Table 6: Areas identified for further investigation and/or validation

Thematic areas	Geographic areas	SLP (Y/N)
• Cyclone	• Low lying areas and Mountainous areas e.g. Eastern highlands in Mutare, prone to cyclones need further investigation to understand the extent understand extent of exposure and risk reduction measures in place.	Y
• Disease (human and animal)	• Disease prevalence is not uniform hence there is need to follow up to discern seasonality and effects in different settings. The process will further allow examining health centres and their distribution.	Y
• Pandemic	• Available HIV data can be mapped as well as COVID 19 data to generate more understanding of high and low impact areas.	N
• Markets	• Understanding markets and their distribution is very important in influencing food availability and accessibility. Further investigation will indicate seasonality in terms of availability. • Changes in land use has reshaped the markets such including the traditional markets. • Additionally, the emergence of rural agrarian economies centred on cotton and tobacco areas needs specialised studies to interlink the synergies and complementarities.	N N N

2 ICA Technical findings

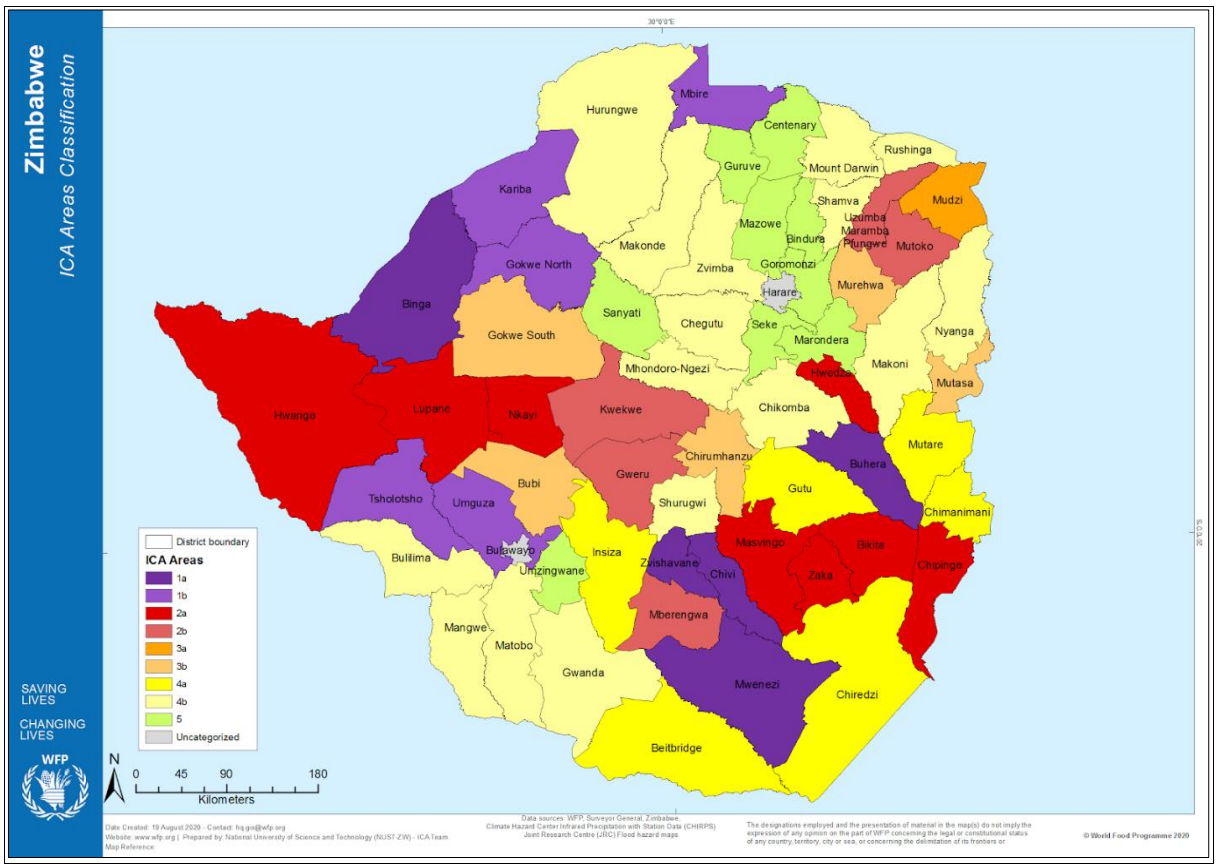
Table 7: Summary of essential parameters in the ICA

Dimension	Indicator	Source and time span	Threshold
Core dimensions			
Food security (or other)	% food insecurity	ZIMVAC (2015-2019)	33%
Population		-	
• Figures	Population/ admin boundary	ZIMSTAT	
• Density	People/km^2	ZIMSTAT	33 people/km^2
Natural shock			
• Drought	Number of Poor Growing Seasons	CHIRPS Rainfall Estimates (RFE) (1981-2018)	Natural Break-Jenks
• Floods	Floods frequency	Joint Research Centre Flood hazard data (JRC) (100 Year)	Natural break-Jenks
Land degradation			
• Soil erosion and Land cover change	Revised Universal Soil Loss Equation (RUSLE) Negative land cover change	NASA MODIS land cover product MCD12Q) FAO GeoNetwork, 2000 NASA SRTM Digital Elevation Model (DEM) FAO Digital Soil Map of the World v3.6, 2003	Bergsma classification
Additional layers			
• Number of health facilities	No of health facilities per district	Ministry of Health and Child Care	Absolute count

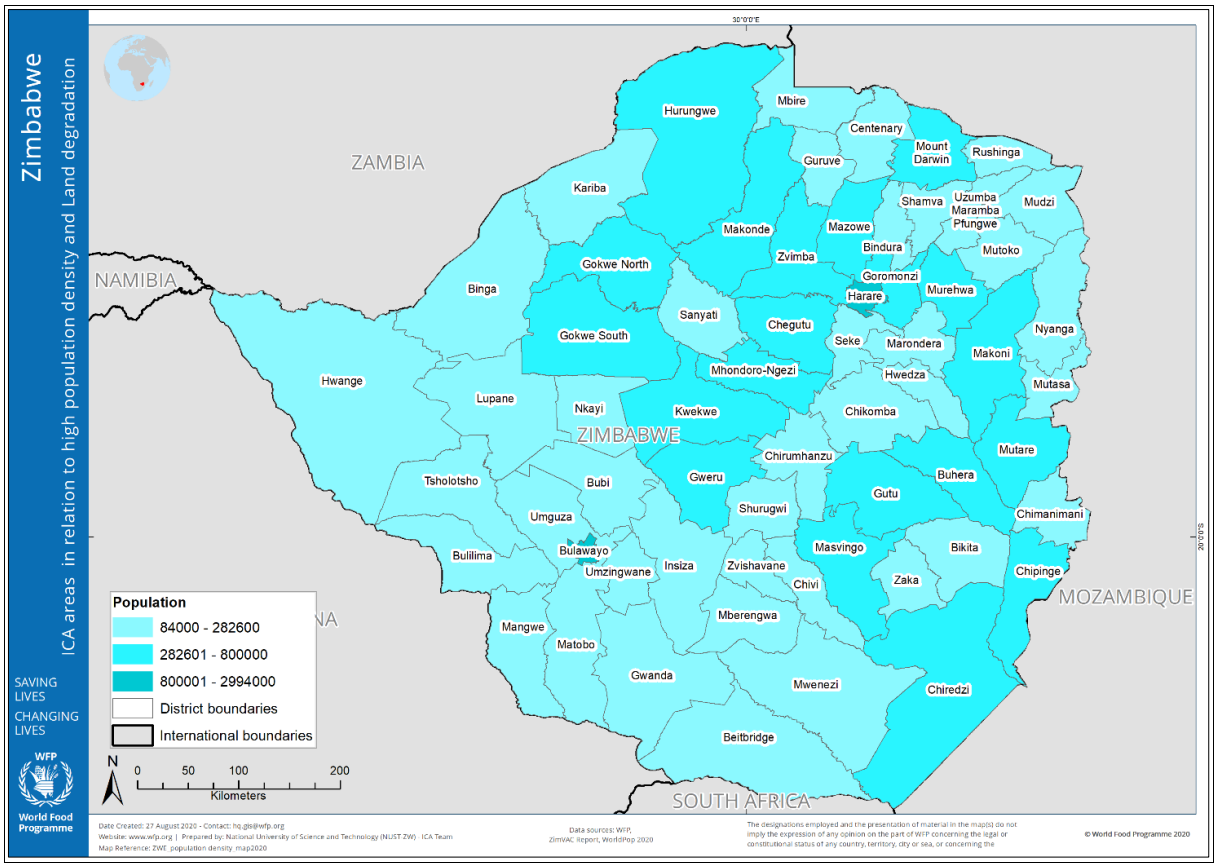
ICA Areas have been calculated at District Level

NB: Since no national target for food insecurity could be secure (to be used as a threshold), a 33% threshold value was adopted as an arbitrary, preferred threshold after testing several threshold values in the analysis and visually assessing the different outputs vis-à-vis what is known to be realistic food security scenarios in different regions in the country (from the ICA team's expert knowledge).

Map 3: ICA Areas



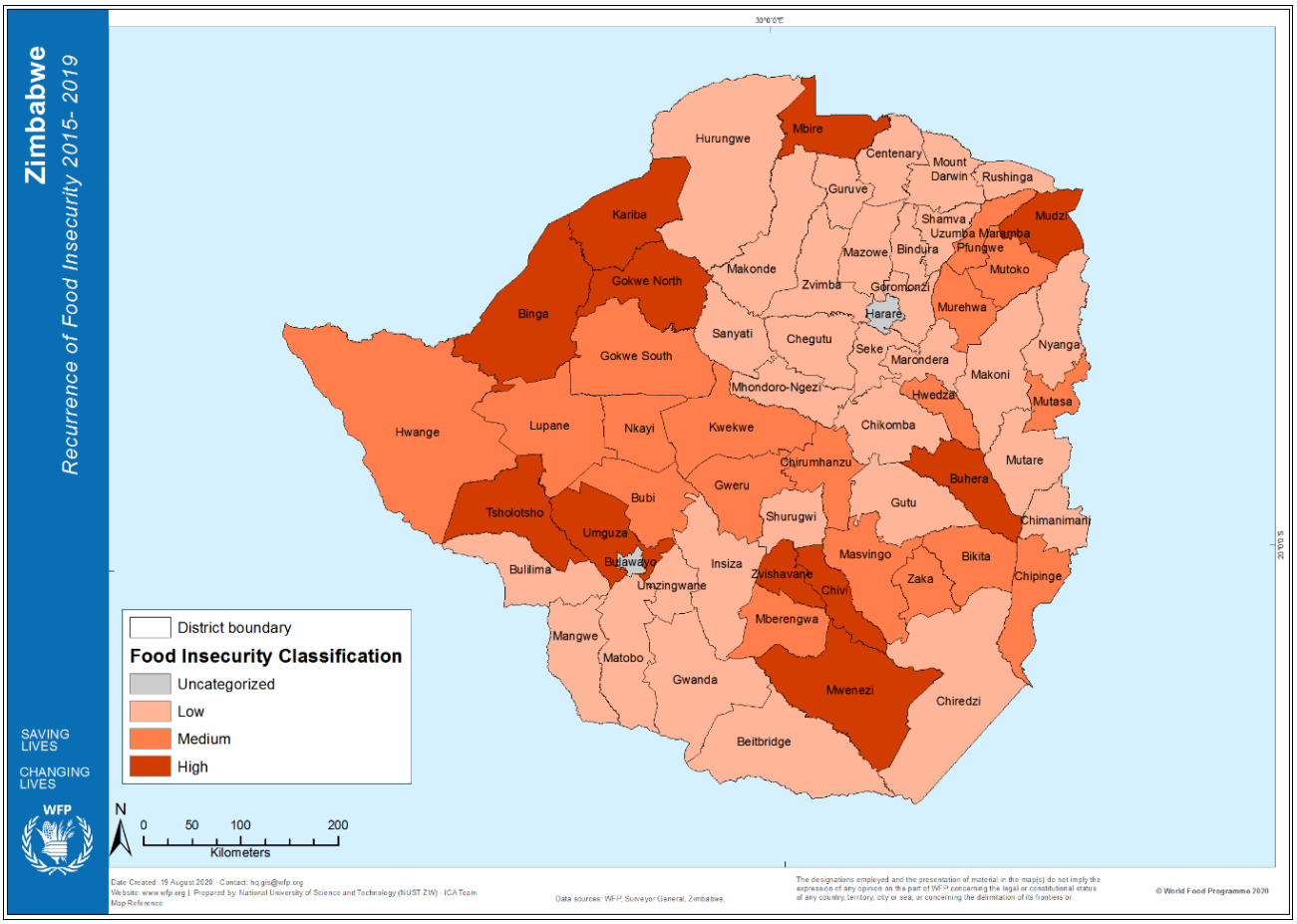
Map 4: ICA Areas reflecting population density



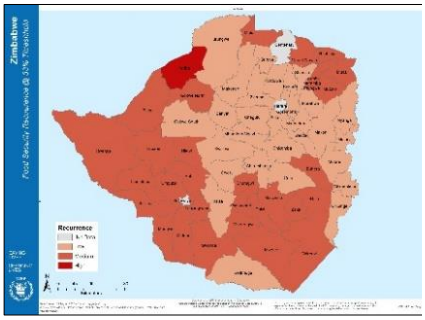
2.1 Food security findings and population figures

2.1.1 Food security

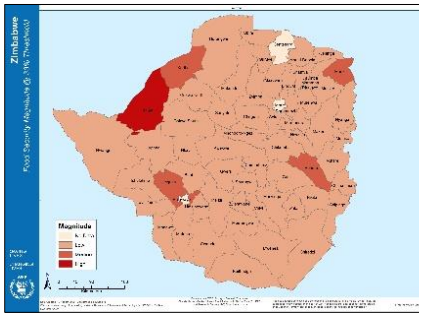
Map 5: Food security maps



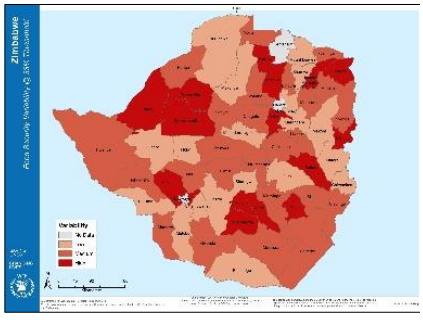
Recurrence of food insecurity above threshold



Magnitude of food insecurity compared to national mean



Variability of food insecurity across historical data set.



Dimension	Indicator	Source and time span	Threshold
Food security	percentage of food insecure households	Zimbabwe Vulnerability Assessment (ZIMVAC) 2015-2019	33%
Population Figures	Population food insecure population	ZIMSTAT	Natural Break Jenks
Population Density	People/km^2	ZIMSTAT	33 people/km^2

Technical review

The ICA categories and areas provide evidence for broad programmatic strategies and discussion with partners on those experiencing intermittent food security patterns and natural shocks. Categories 1 and 2 (Map 2) have the highest combined levels of natural shocks and food insecure percentages. This is confirmed by the comparison of the 2014 ICA findings which show that two districts fell in the 1st category (Binga and Kariba) with same category registering more districts in the 2020 findings (Binga, Buhera, Chivi, Gokwe North, Kariba, Mbire, Mwenezi, Tsholotsho and Umguza).

Notable inclusions in Category 2 are Kwekwe and Gweru which need further investigation since most of the areas have been converted from commercial farms during the land reform program and the prominence of small-scale mining activities adds to the diversity of incomes. Communal farming activities such as crop and livestock farming as well as artisanal mining dominate these areas. While it would be interesting to examine the contribution of artisanal mining to food security, the challenge comes with the informal nature of the returns of which data is not available.

High food insecure areas are also exposed to high natural shock along the Zambezi and the Limpopo basins where drought and food hazards are highest. As such, this reflects high exposure and vulnerability of households as frequency of shocks contributes to the erosion of livelihood sources.

The following areas were classified considering a combined scoring of the recurrence of food insecurity values above threshold, their average difference from the threshold and their variability or fluctuation over time. Seventeen percent (17%) of the districts are classified as highly food insecure (Mwenezi, Chivi, Zvishavane, Umguza, Tsholotsho, Buhera, Binga, Gokwe North, Kariba and Mbire) whilst 50% are classified under low risk. These are the Districts that are notable at high risk and are known food insecure hotspots of the country. Of note are changes in the agroecological zones whereby areas experiencing food deficits (related to poor precipitation) increased i.e. shrinkage of food secure zones.

2.1.2 Estimated Numbers of Food Insecure People

Longer-term programme planning requires an indication of the number of people who are likely to require assistance. To calculate this, data on the number of people estimated to be food insecure between Year1 and Year5, as reported by ZIMVAC (2015-2019), was tabled. These figures reflect a significant increase in the number of food insecure households compared to the period 2009-2014 whose average stood at 1, 081, 000 people. The increase in food insecure households is attributed to the increase in the frequency of shocks whose effects continue to erode the coping capacity of the exposed population. Figures for rural population were used. The lowest numbers (in yellow) and the highest numbers (in red) are highlighted:

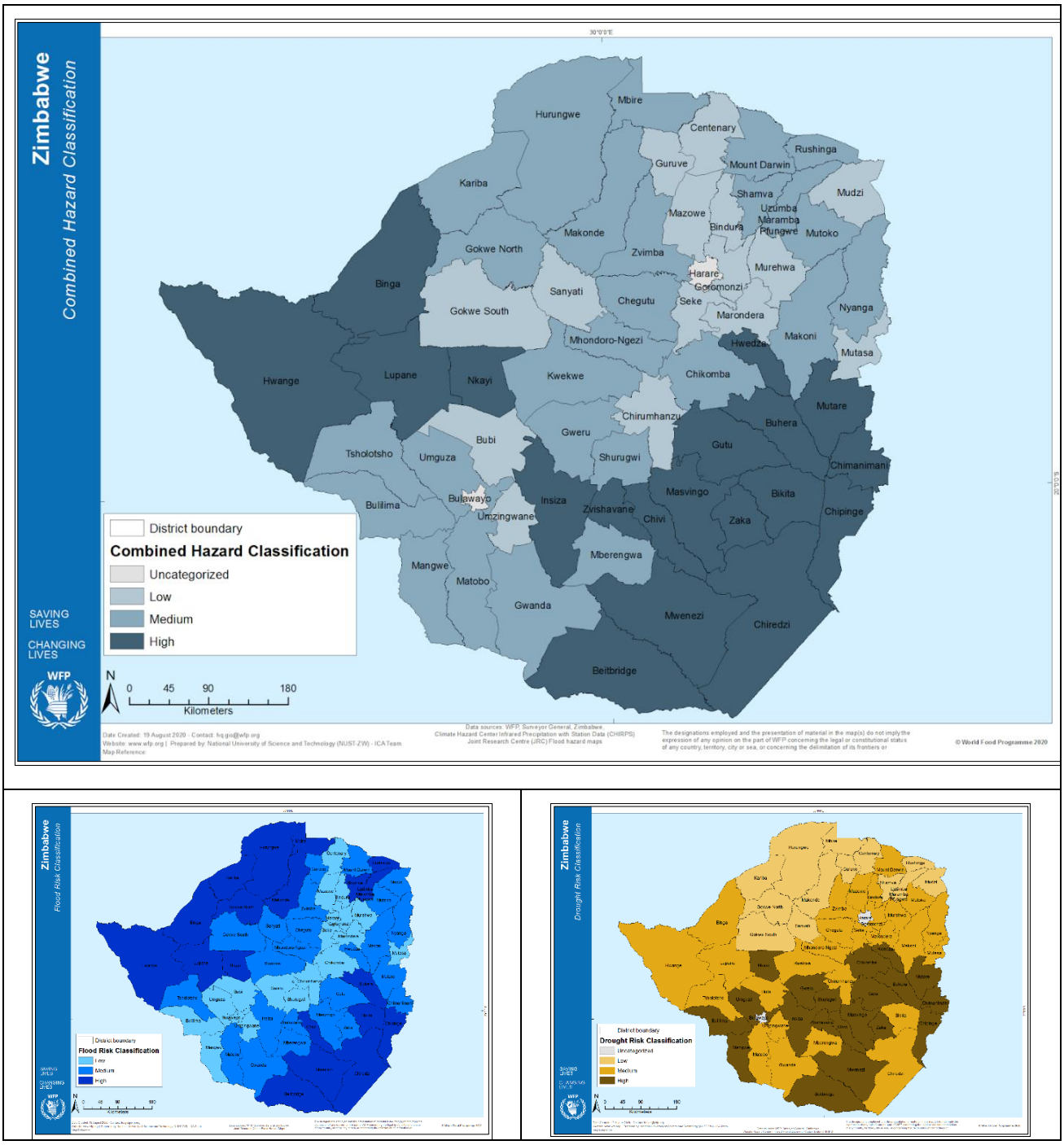
Indicator from **Year 1** to **Year 5- ZIMVAC (2015-2019)**

2015	2016	2017	2018	2019
2,889,188	4,259,207	1,095,615	2,686,194	5,092,741

Purpose	How is it done?	What does it mean?	Number
Long-term planning	[Average of all figures]	Reflects the number of people who were either (a) consistently food insecure or (b) have experienced food insecurity at some point due to a specific shock or event.	**3,162,616**
Most vulnerable	[Average of the two lowest figures]	Estimated *core* group of people who were consistently food insecure regardless of good or bad harvests.	**1,681, 083**
Preparedness planning	[Overall avg.] *minus* [Avg. of the two highest figures]	Estimated number of *additional* people at risk, who could fall into crisis in the event of a shock (natural or man-made).	**1,562,694**

2.2 Natural shock findings

Map 6: Composite natural shock map



Dimension	Indicator	Source and time span	Threshold
Floods	Flood risk percent/flood depth	Joint Research Centre Flood hazard data (JRC) (100 year)	Natural break-Jenks
Drought	Number of Poor Growing Seasons	CHIRPS Rainfall Estimates (RFE) (1981-2018)	Natural break – Jenks

Technical review

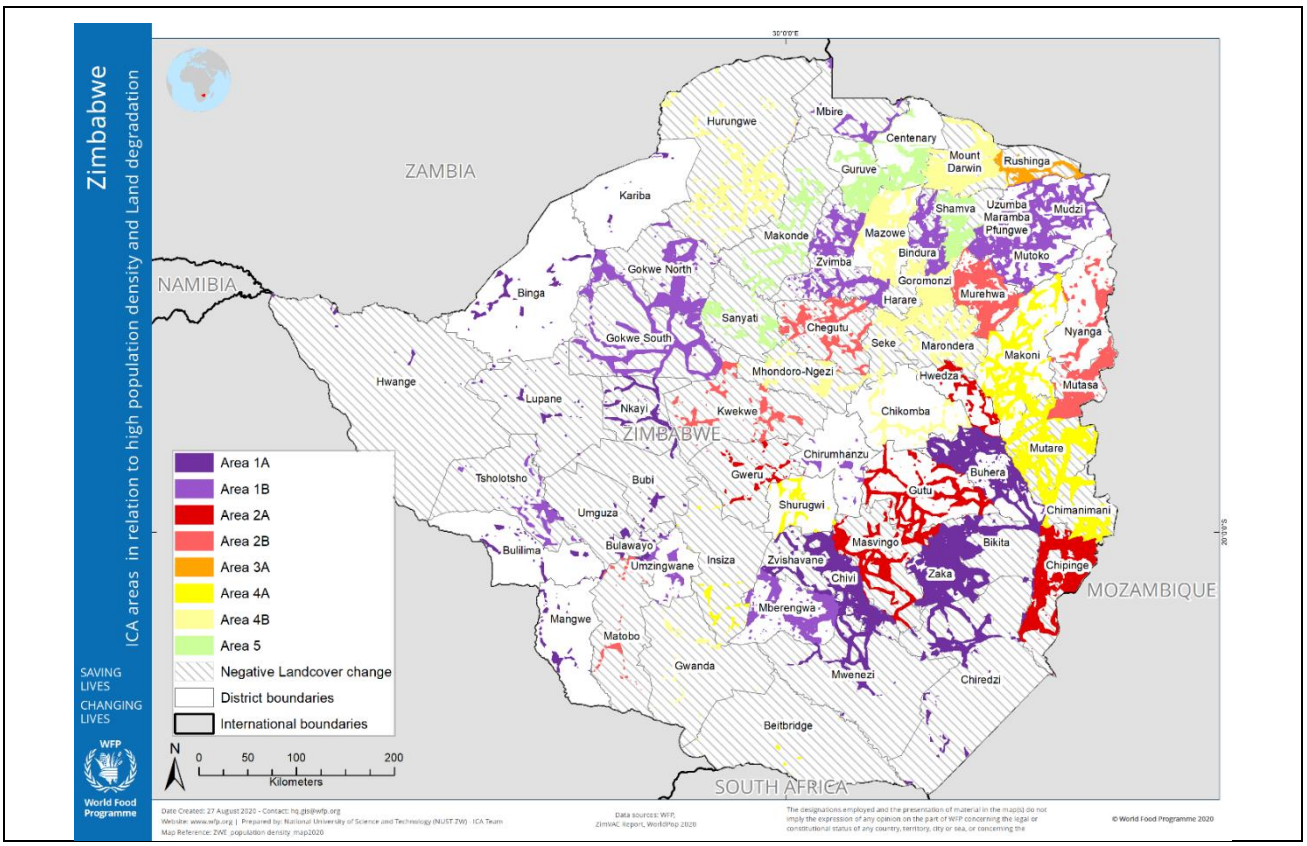
The combined drought and flood score ranged from 2 to 6. The combined hazard map highlights two of Zimbabwe's main basins being prone to hazards namely the Zambezi and the Limpopo basin which are recipients of all the waters draining from the central Zimbabwe acting as the main water shed. The highest impact of shocks is largely experienced by Masvingo, Matabeleland North, part of Manicaland and Matabeleland South provinces and this reflects a significant percentage of the population that is exposed.

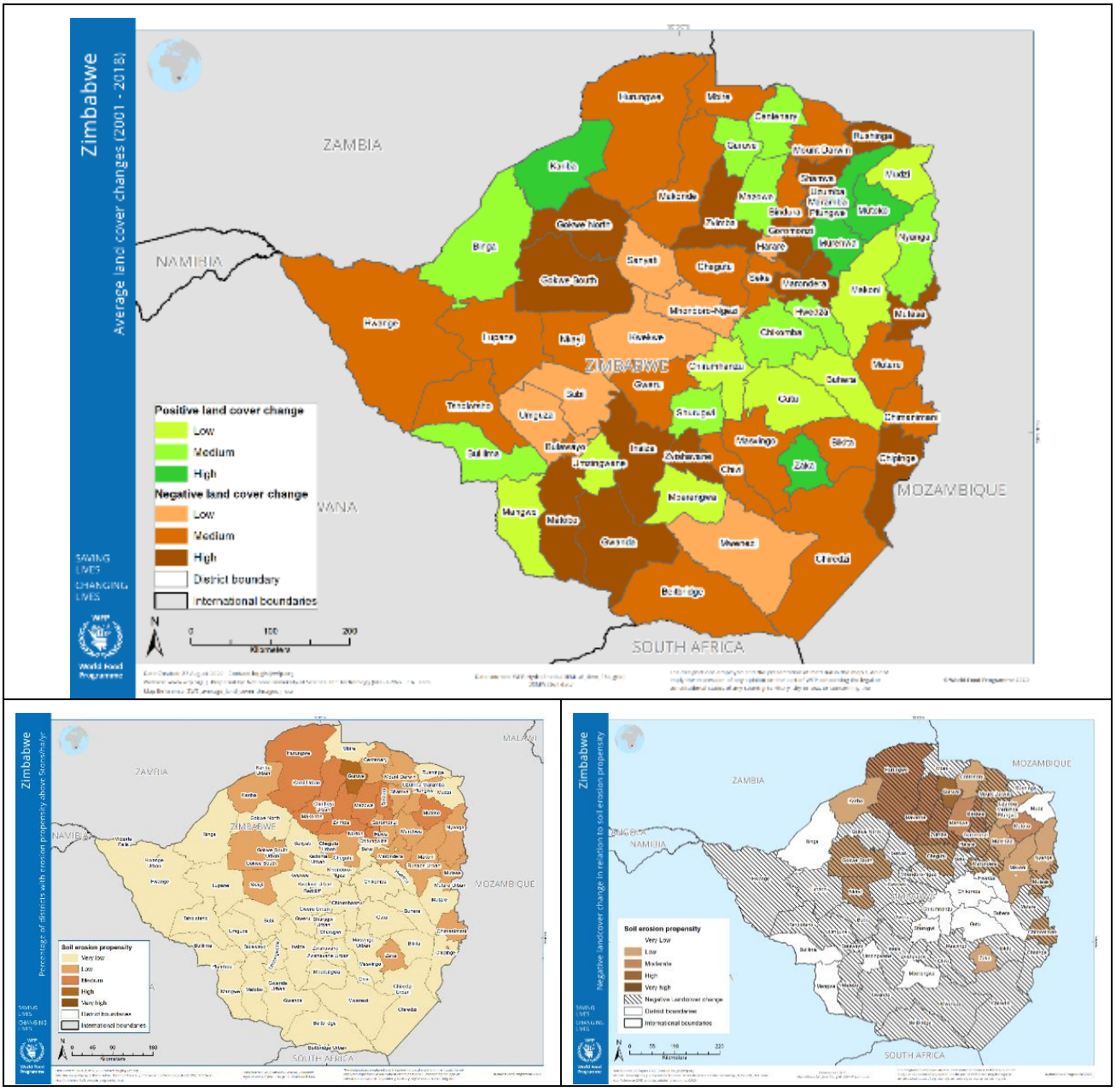
Districts in Southern Zimbabwe showed high prevalence of drought (poor growing seasons) as compared to the north. Zimbabwe's rainfall patterns are controlled by major air masses, the Inter Tropical Convergence Zone controlled by the NE monsoon, South Easterly air masses from the Indian and the Atlantic Ocean all favour rains in the northern parts. The frequency of droughts has led to changes in agroecological zones with low rainfall areas expanding at the expense of high rainfall zones. This shift reflects increased exposure to low precipitation and the shrinkage of livelihood options for communities in these areas.

In terms of flood hazard, 30% of Zimbabwe was classified as flood risk with notable areas falling along the Zambezi basin as well as the Limpopo basins. These are also characterised as low-lying areas of Zimbabwe. It is interesting though to note that recent floods caused by tropical cyclones notably in Chimanimani, Nyanga and Chipinge have not been classified as risky despite the devastating effects on lives and livelihoods. The disaster event could have been aggravated by settlement patterns and the flooding data model which could have flattened the effects of cyclones as they are rarely captured as a shock. In this regard, there is a need to increase consideration of cyclones in designing shock-responsive measures in disaster risk reduction plans.

2.1 Land degradation findings

Map 7: Composite land degradation





Dimension	Indicator	Source and time span	Threshold
Soil erosion propensity	Revised Universal Soil Loss Equation (RUSLE) Negative land cover change	NASA MODIS land cover product (MCD12Q) FAO GeoNetwork, 2000 NASA SRTM Digital Elevation Model (DEM) FAO Digital Soil Map of the World v3.6, 2003	Bergsma classification
Land cover change	Negative land cover change	NASA MODIS land cover product (MCD12Q)	
Population Density	people per km^2	WorldPop as UN adjusted gridded data for the year 2020	33 people per km^2

Technical review

Eight two percent (82%) of all districts had erosion propensity > 5 tons/ha per year though this manifested more intensely in districts in Mashonaland province. This could be attributed to the fact that the greater part of this region has fertile soils which are favourable for extensive farming (from communal to commercial level) which is known to be associated with clearance of forest cover and compromising landscape stability and thus higher erosion. The map also shows an intersection of negative land cover and significant erosion propensity within 49% of districts. While it would have been expected that areas with negative land cover would also experience higher erosion propensity that is not the case in most western and southern parts of the country (covering mostly the Matabeleland and Masvingo region). This could be attributed to possible relative effective local landscape conservation practices in these areas among other reasons.

The maps shows that high negative land cover changes are predominantly located along the central watershed area which apparently coincide with the distribution of numerous mining activities within this region. Other areas of note are the south eastern districts within the lowveld of the Limpopo basin though these have shown to have very low erosion potential. Furthermore, it should be noted that, the modelled data could be showing high erosion propensity in high elevation areas than low lying areas due to fact that the model primarily bases its computation on the DEM and thus might miss high erosion propensity related to flash floods in low lying areas with poor/ low vegetation cover.

Furthermore, this could be related to the fact that these areas are known dry/low-rainfall areas hence low erosion potential could be related to less run-off water in the areas. Secondly, in some rural communities in Zimbabwe, there is a known community-based landscape conservation practice of gully filing whereby village traditional leaders once annually (over a period of about a week), mobilise their communities to scour the landscape to identify and fill all gullies within their areas of habitation (especially towards the start of the rainy season). Such practices could also be influencing the patterns seen here that areas may have negative land cover changes but very low erosion propensity.

An overlay of the high erosion, the land degradation and ICA areas reveals over 90% of areas within the ICA areas 1 and 2 have land degradation (marked by negative land cover change) suggesting a positive correlation between food insecurity and land degradation. Of note is Matabeleland North which is mostly in ICA 1A and B. However, there are some areas in the Zambezi Valley (e.g. Hurungwe, and Makonde districts) which despite having both very high soil erosion and negative landcover change are not falling within the highly food insecure ICA categorisation as expected but are with the least food insecure ICA areas i.e. 4 and 5 respectively. These areas are known from the 2014 ICA have been categorised as least food insecure indicating perhaps consistent conditions prevailing in these areas influencing food security situation.

The overlay of ICA, high population density and negative landcover areas reveals that approximately 95% of all districts that fall in the highly food insecure category (i.e. 1A and 1B) are in areas with relatively high population densities and high land degradation such as Tsholotsho, Chivi, Mudzi and Gokwe North districts. These are areas known (from background knowledge) to be vulnerable to natural shocks such as drought and flash floods which could be exacerbating food insecurity therein. However, other areas with high population e.g. Binga, Bulilima, Mangwe and Umzingwane districts appear to be in ICA category 1A (highly food insecure) despite having no land degradation showing that there are other potential lens (factors) that could be influencing food security in these areas that are not capture by the ICA. Such factors could be related to disease burden (e.g. Malaria and HIV/AIDS) which tends to negatively impact on community capacities to engage in livelihood activities that can ensure their food security.

2.2 Areas for further investigation

2.2.1 Flooding caused by Cyclones

This is an important factor to examine as it impacts different communities disproportionately through its destructive nature. Livelihoods and thus food security are disrupted by cyclones.

2.2.2 Access to markets

Access to markets in rural settings is a critical and challenging due to poor road network and irregular settlements. Overlaying the ICA road network and location of business centers gives an indication of geographic location and the ease of access critical services. Further investigation on markets will help determine its effects on food security and access to other basic services such as health. This aspect is worth following up to examine how it influences opening up of the rural economy, changes livelihoods and thus food security in general.

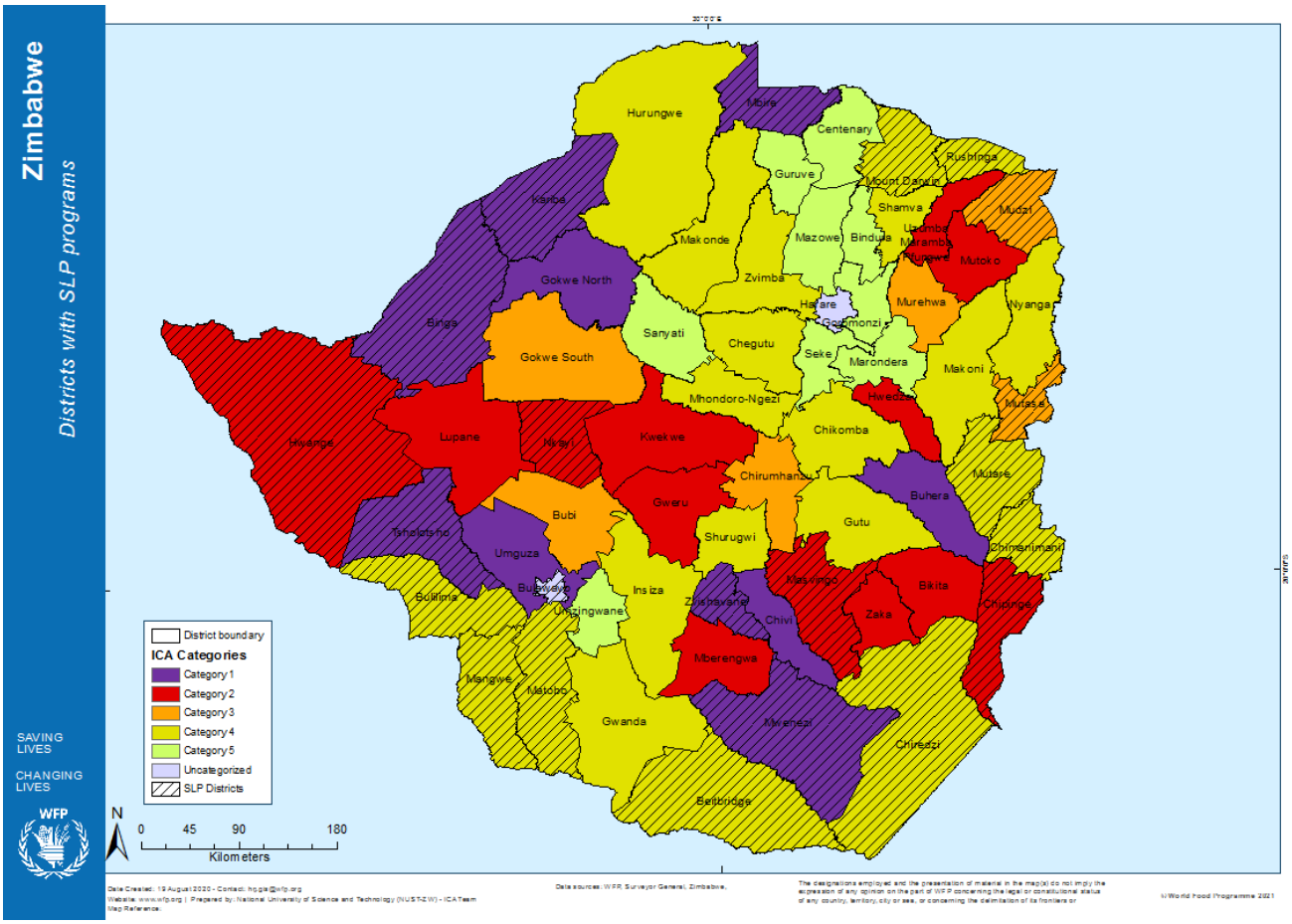
2.2.3 Human and animal disease

The prevalence of zoonotic and other vector borne diseases could help generate more insights on how these exacerbate other shocks in different communities. For example, the analysis could reveal potential hotspots as well as more information on seasonality of occurrence. The impacts of pandemics such as HIV and COVID-19 need to be explored to understand their effects on communities and influence on food insecurity in different context.

2.2.4 Geographic areas (for sub-national investigation e.g., Seasonal Livelihood Programming (SLPs)

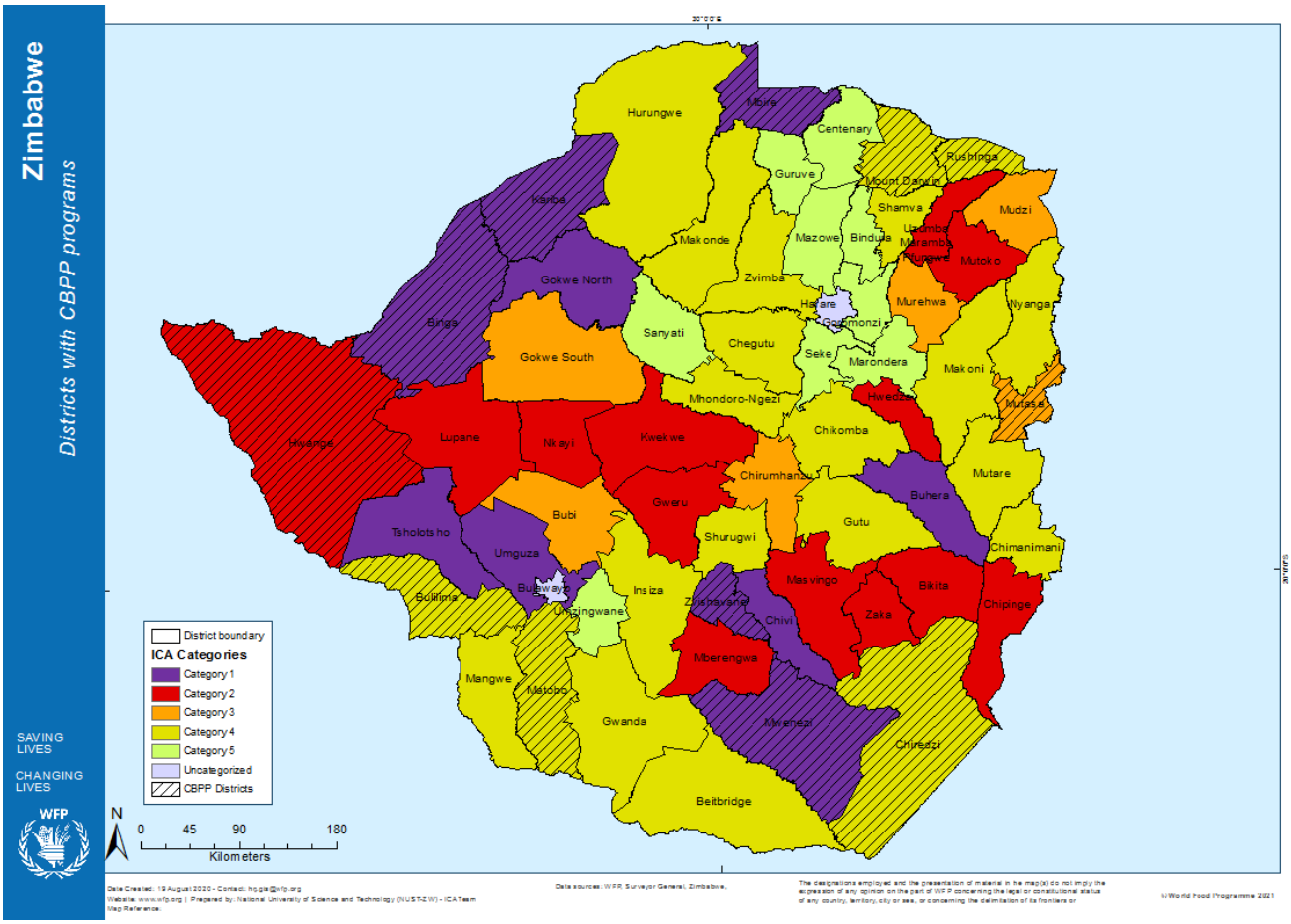
A context specific analysis was conducted to generate more insights on who is largely affected, specific disaster risk and preparedness measures in place to effectively absorb the impacts of shocks. Areas identified as highly food insecure such as Bubi, Buhera, Chivi, Mbire, Mutasa, Umguza and Zvishavane e.t.c have been targeted for the SLP as informed by the maps below.

Map 8a: Districts where SLPs are conducted



Following the SLP in selected districts, further areas were targeted for CBPP programs and these include Binga, Bulilima, Chiredzi, Matobo, Mbire, Mutasa, Mwenezi, Rushinga, Zvishavane and Mt Darwin, as shown by the map below.

Map 8b: Districts where CBPP are conducted



2.3 Overview of the data landscape

This section tables issues of relevance to data availability (as relevant to any or all of the above), data quality, reliability, continuity, accessibility etc; and specific recommendations for decision-makers to consider that could enhance future exercises.

Sector, theme, topic	Data issue	Comments and recommendations
Food security	Data reliability, accessibility and quality.	Disaggregation of data from village to provincial is very critical to allow analyses at all levels. Universities and other research institutions need to develop data repositories based on sound and tested methodologies.
Natural shocks	Data is readily available though at global level. Its use does not generate the desired results at local levels/ small scale spatial areas due to resolutions	Local institutions have data. However, its release for academic purposes is a challenge given limited trust and belief that data may be exploited for political purposes.

3 ICA Policy recommendations

Findings from the ICA can also inform national policy level dialogue. The following recommendations emerge for consideration:

3.1 Institutional strengthening on promoting food security

Enhance national policies on disaster risk reduction and agriculture so that they speak to strengthening mechanisms to improve food and nutrition security through enhanced institutional support. Furthermore, the note intends to support policymakers, advisors and other relevant stakeholders in enhancing coherence between food insecure households, extension personnel, agricultural institutions and other relevant Non-State Actors. The policy is envisaged to guide on ways to leverage existing institutional frameworks as well as facilitate creation of essential structures to support food and nutrition security. Reviews should be encouraged to interrogate policy changes necessary to enhance the potential of agriculture and other supportive arms to improve productivity and access to food and nutrition.

3.2 Improved water utilization and management systems

The analysis reflects that most areas in Zimbabwe experience water challenges emanating from, among other issues, poor water infrastructure and weak institutional water management capacity. An encompassing policy seeking to improve water collection, preparation, use, disposal, and protection of water resources should be formulated taking into account the existing situation. This might also entail integrating these aspects into relevant sector policies to help build resilience in this regard. The proposed framework should foster the creation of a system of regulations and institutions with a unified national perspective.

3.3 Mapping of flood and cyclone prone zones

The hazard losses can be prevented and/ reduced by incorporating into policy frameworks effective hazard mitigations mechanisms. These hazard mitigation mechanisms can aid galvanize public and private institutions and vulnerable populations to proactively reduce flood risk through the development of flood inundation maps. Such maps are very essential for local authorities planning, formulation of emergency action plans, incentivize flood insurance and can trigger further ecological studies.

3.4 Integrating Environmental rehabilitation

The environmental policy can include laws and policies addressing water and air pollution, chemical and oil spills, smog, drinking water quality, land conservation and management, and wildlife protection, such as the protection of endangered species. The integration of environmental rehabilitation is envisaged to influence sustainable utilization of natural resources and shape intra and inter community conservation efforts. The policy on environmental degradation should embrace climate change and variability issues. This should ensure/prioritize cross-fertilisation and/ streamlining of sectoral policies fostering linkages and synergies in strategies and programming.

4 ICA Programme Recommendations

The Integrated Context Analysis (ICA) is the first of **three tools** that inform a **three-pronged approach (3PA)** to **integrated programming**. The 3PA comprises a national level, data-driven context analysis (the ICA) which guides in positioning broad programme strategies around the country, and flags where discussions with sub-national and community representatives could be undertaken to create accurate **seasonal livelihood calendars** (Seasonal Livelihood Programme (SLPs)) that capture common practices, shocks and stressors and can inform specific activities and interventions. SLPs can then suggest participatory discussions with specific communities and local authorities to inform local development plans.

The following broad programme strategies could be adopted across the country, based on the ICA Area findings.

4.1 Preparedness

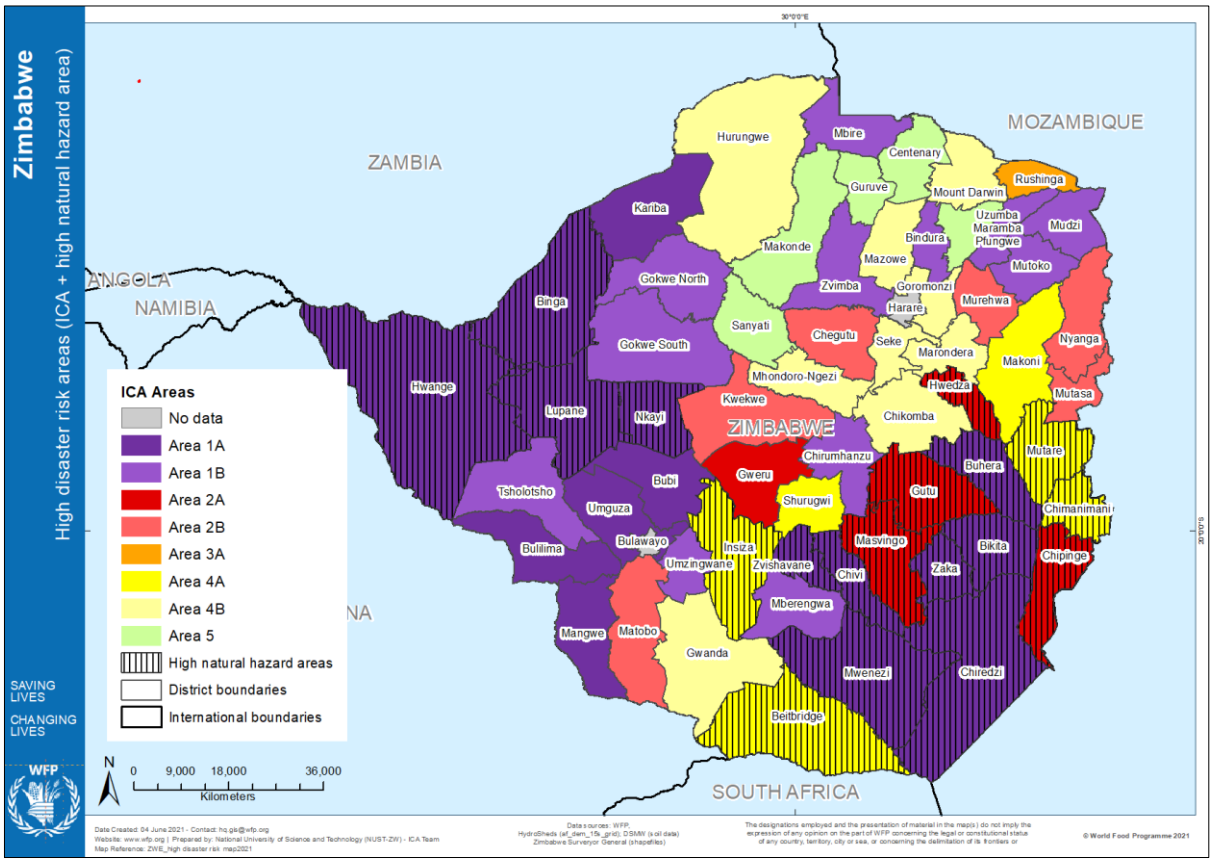
All areas that have been mapped in ICA areas 1A and B such as Binga, Kariba, Tsholotsho, Lupane, Nkayi, Gokwe, Mbire, Chivi, Zaka, Buhera and Chipinge have been identified as priority areas for investment in preparedness. These areas are persistently food insecure and experience increased frequencies of incidences of drought. Preparedness cannot be over emphasized given its potential to enhance institutional ability to deal with shocks.

Kariba, Tsholotsho and Chipinge have been identified as priority areas for flood hazards preparedness since these lie in the lowveld areas of the country i.e. the Zambezi, the Limpopo and the Save valleys which are known to be prone to flooding over-and-above being categorised as ICA areas 1A and B. Preparedness to hazards will be reflected by the development of response plans, establishment of early warning systems and response committees to spearhead resource mobilization and deployment.

4.2 Disaster risk reduction

Hwange, Binga, Lupane and Nkayi (in Matabeleland North province) ,Chivi, Zishavane, Zaka, Bikita, Mwenezi and Chiredzi districts (in Masvingo province) and Buhera in Manicaland province are identified as priority areas for investment in disaster risk reduction (DRR) programmes. These areas were found to be in ICA areas 1A and B coinciding with high natural hazards (drought and floods) incidence. The results align well with what is known about these areas i.e. these areas known to be highly vulnerable to natural shocks such as drought and flash floods which exacerbate food insecurity therein. However, in the land reform and land redistribution contexts, land degradation is escalating, and more districts will need to be considered for prioritisation on conscientization on disaster risk reduction. The advent of artisanal mining deepens exposure of the land to erosion and reduces the grazing capacities of communal resources. DRR becomes necessary to capacitate miners and other land users on the need for sustainable utilization of natural resources.

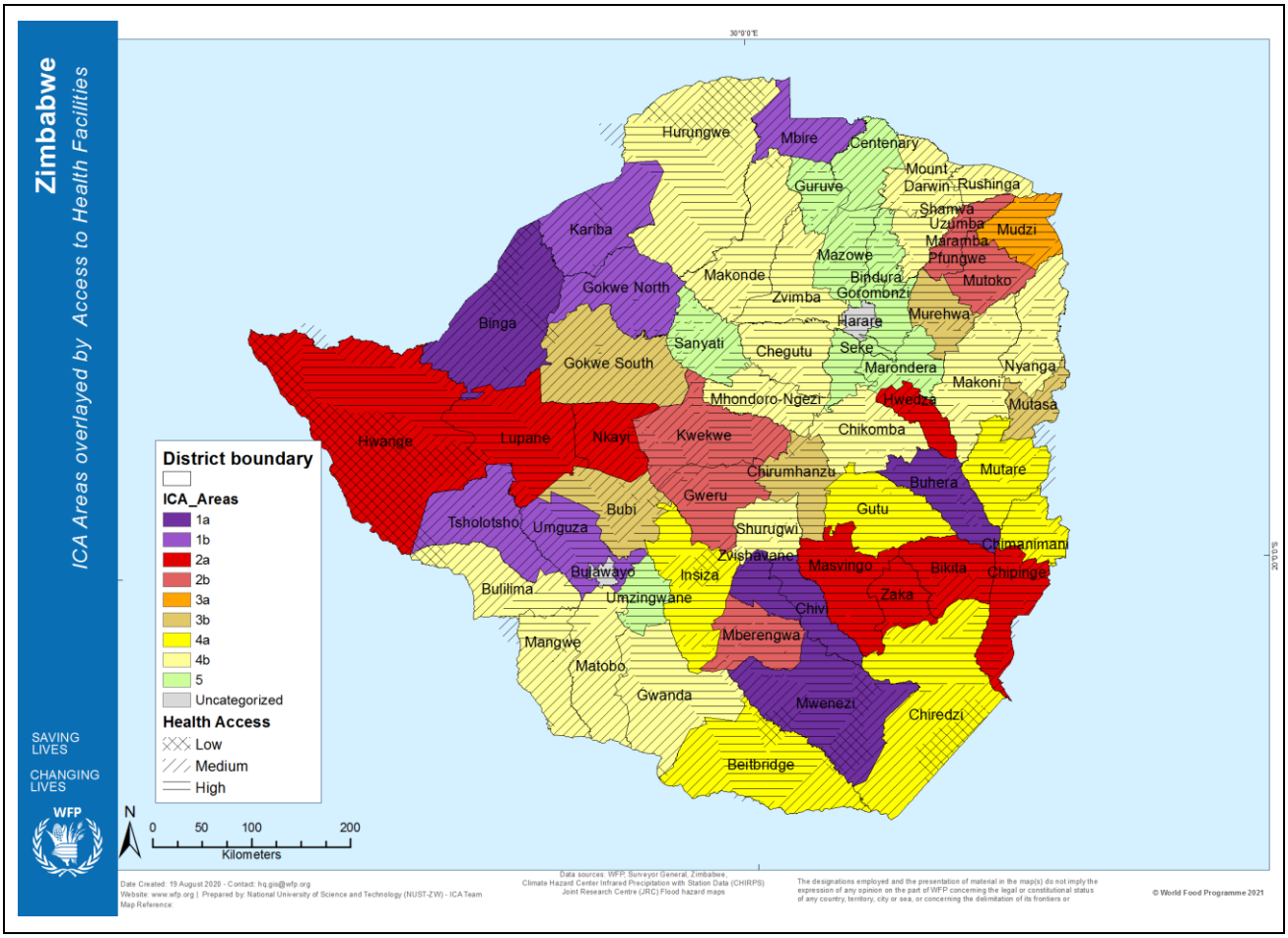
Map 11: Areas where disaster risk reduction strategies are critical



4.3 Social protection

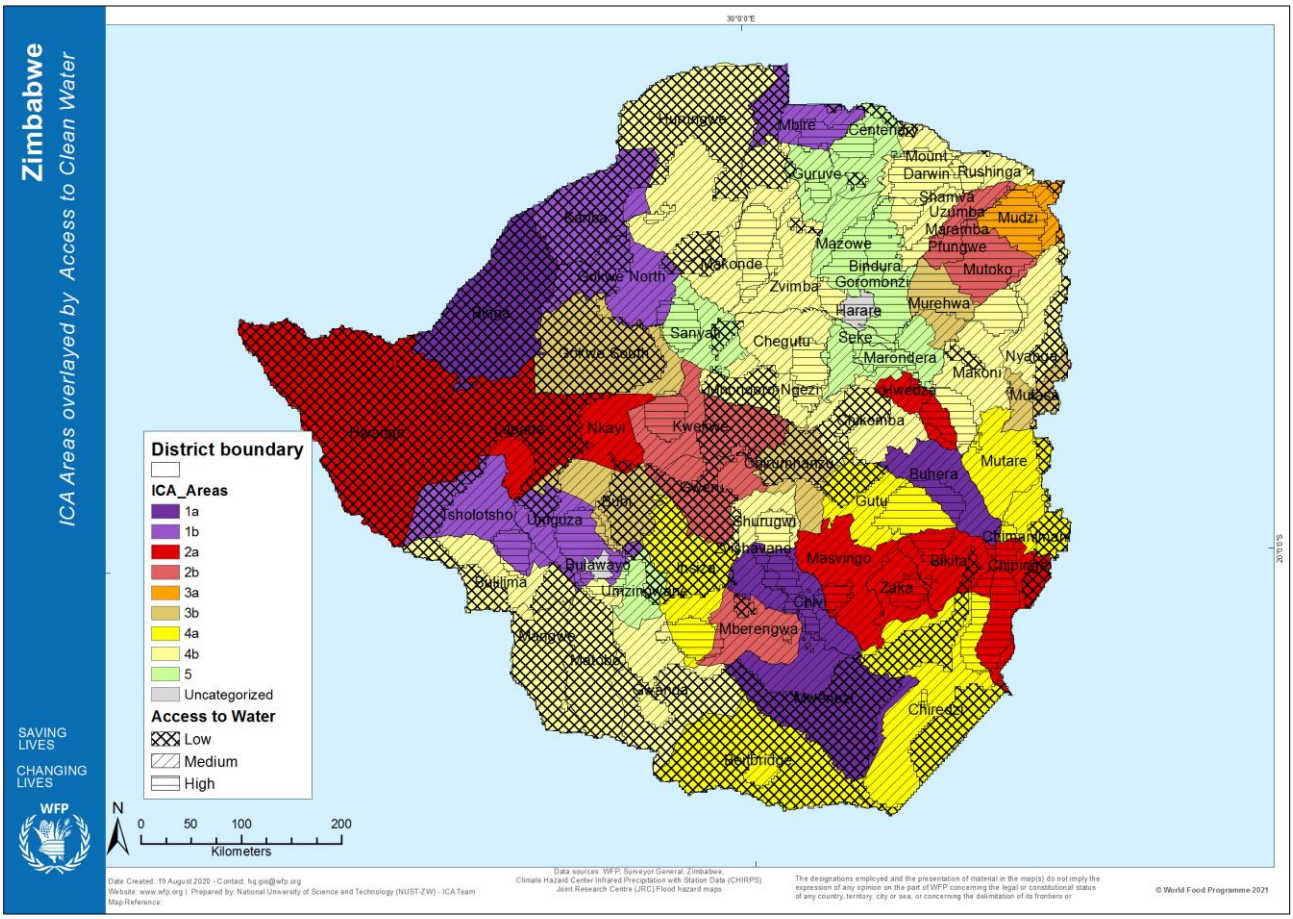
The ICA data overlaid by health facility access brings gaps on areas where poor access to health facilities and food insecurity intersect. Most areas in ICA areas 1A and B have poor access to health services and other social amenities indicated by absence of main roads linking to major health facilities or being distant from health facility. The map (Map 12A) shows that areas including Binga, Kariba, Gokwe Mbire, Buhera Mwenezi and Tsholotsho Districts are priority areas for investment in social protection and safety nets in form of improved access to health. While other areas may not be distinct in terms of access to social services, the poor road network and at times communication infrastructure makes all areas a priority. Furthermore, they are mostly in the lowveld of the country and as such are prone to other shocks such as disease outbreaks and flooding.

Map 12A: Areas where safety nets and social protection (access to health facilities) strategies are critical



Access to water is very critical, supports livelihood diversification and enhances good health. The ICA area overlaid with to water shows that most of the ICA areas 1A and B, as well as 2A have very acute shortages of access to portable water (shown in Map12B). Areas such as Binga, Gokwe, Kariba, parts of Hurungwe and Mbire in the northern parts of the country experience high food insecurity and poor access to water. Investment in improving water availability is a priority in these areas. Other areas that can be prioritized include Tsholotsho Beitbridge, Buhera, Hwange, Lupane, Nkayi, Zaka and Chipinge. In other words, these findings could also help augment and/ inform WASH improvement strategies in a more targeted manner.

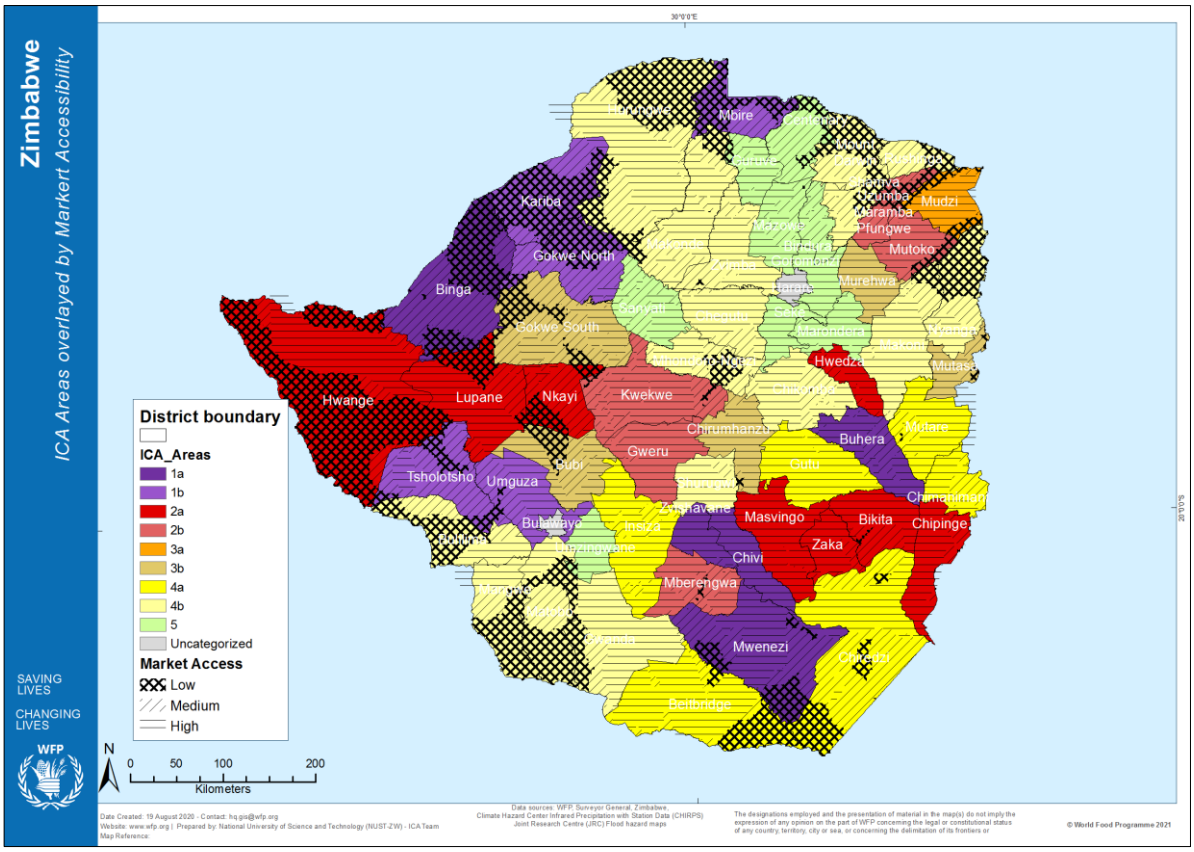
Map 12B: Areas where safety nets and social protection (access to portable water) strategies are critical



4.4 Market access

Market access derived by modelling location of business centres as well as road network helps identify areas with low market access. Remotely developed areas such as Binga, Kariba Gokwe, Mbire, Lupane, Nkayi, Hurungwe, Mt Darwin, Tsholotsho, Bulilima, Mangwe, Matopos and Mutoko normally experience low investment in infrastructure development such as roads hence market access is generally poor. These are predominantly high food insecure zones coupled with high incidences of hazards and shocks. Most of these areas fall in ICA areas 1A and 1B. Improving market access for rural communities will go a long way in increasing the number of players and ultimately influence the pricing of basic services and food availability as well as access.

Map 13: Areas where access to-market strategies are critical



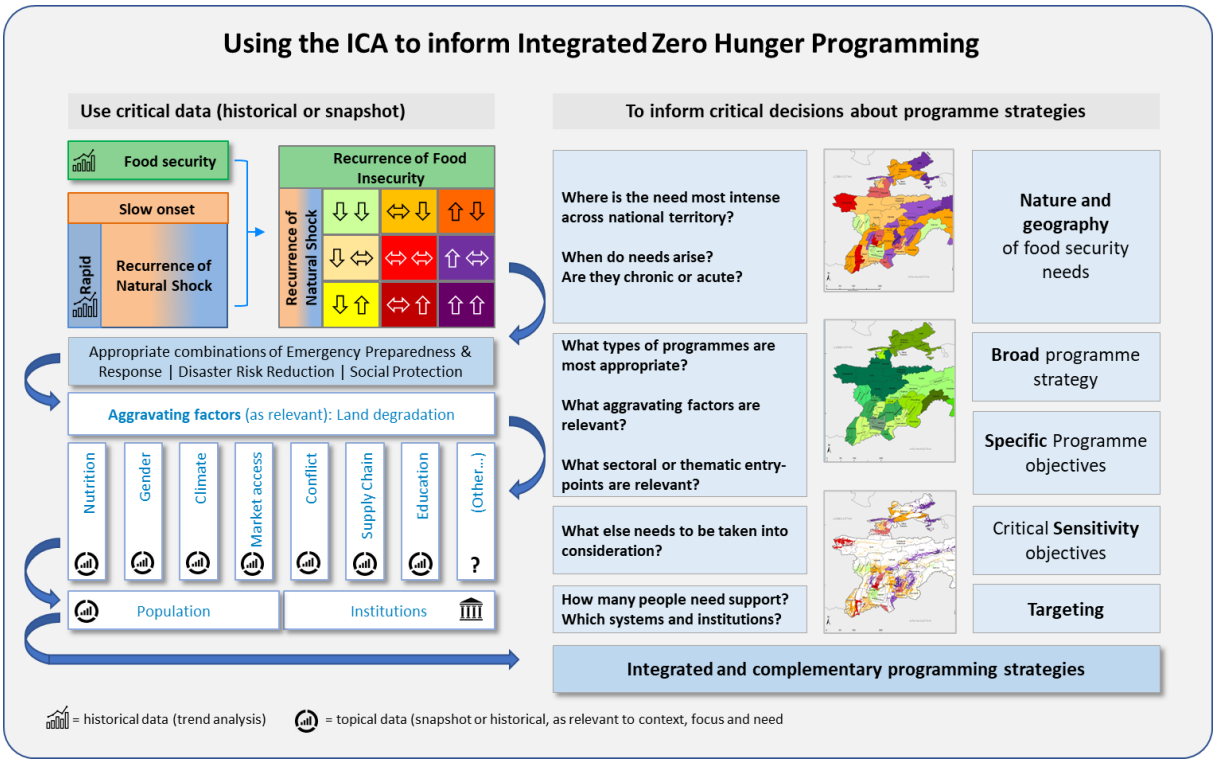
5 Technical annexes

5.1 Overview of the ICA methodology

The Integrated Context Analysis (ICA) is an analytical process that contributes to the identification of broad national programmatic strategies, including resilience building, disaster risk reduction, and social protection for the most vulnerable and food insecure populations. The ICA is based on principles of historical trend analyses across a number of technical and sectorial disciplines, the findings of which are overlaid to identify areas of overlap. Trend analyses provide an understanding of what has happened in the past and what may (or may not) be changing to act as a proxy for what may occur in the future, and where short, medium, and longer-term programming efforts may be required. It is based on two core factors: trends of food insecurity and main natural shocks (droughts and floods).

The ICA process uses various ICA data layers to identify programme themes relevant to particular geographic areas. Each layer is included for a specific purpose. The ICA Areas and Categories, explained in the following page, combine the core layers of food security and natural shocks to visualise the intersection of the main programmatic themes. Lenses and Additional Contextual Information layers are used to refine strategies identified via the Categories.

The diagram below outlines how the ICA process was implemented. Data used are also shown and how the results/ outputs are used to propose strategic programming and interventions to address food insecurity in various districts in Zimbabwe.



5.1.1 ICA Categories and Areas

5.1.1.1 ICA Categories

Assists with broadly identifying where to place the thematic programme building blocks of safety nets, DRR and early warning/preparedness systems. The ICA categorises the country's district into Categories 1 to 5 based on their levels of recurring food insecurity and exposure to natural shocks. This is done by combining some of the ICA Areas on the

following page, as shown in the table below, such that the nine Areas become five Categories. The ICA categories areas and provide evidence for broad programmatic strategies and discussion with partners on those experiencing intermittent food security patterns and natural shocks. Categories 1 and 2 have the highest combined levels of natural shocks and food insecure percentages.

5.1.1.2 ICA Areas

- Adds detail to the process above, by showing the intersection of food insecurity and natural shock risk.
- The ICA areas map is created by combining for each District the three-point scale values for food security and natural shock risk shown on the following two pages. The high/medium/low values are cross-tabbed, producing the nine area types shown in the table below.

Exposure to Natural Shocks	Recurrence of Food Insecurity above Threshold		
	LOW	MEDIUM	HIGH
LOW	Area 5	Area 3B	Area 3A
MEDIUM	Area 4 B	Area 2 B	Area 1 B
HIGH	Area 4 A	Area 2 A	Area 1 A

5.2 Food security and population figures

5.2.1 Food insecurity analysis

Overview

- The ICA food insecurity classification is one of two core dimensions that determines the overall ICA classification of areas.
- The ICA **food insecurity trends** analysis has been revised to include new factors that more accurately identify key patterns.
- The more nuanced data patterns are used to better define the three-point (high, medium, low) ICA food insecurity scale.
- The revision allows for more robust (evidence-based) contextual descriptions of the ICA food insecurity levels.
- The revision applies to historical, multi-round food security data expressed in terms of percentages of households affected.
- The revision does not apply to IPC or other scaled food security classification data.
- The revision does not alter the approach to cross-tabulating with shock data nor final mapping of the core ICA dimensions.
- The revision does allow for enhanced food-insecurity specific maps and/or overlays to illustrate the new data patterns.

Purpose and rationale

- The ICA food insecurity classification is one of two core dimensions that determines the overall ICA classification of areas.
- To date, it has classified areas according to how frequently their reported percentages of food insecure households have exceeded the threshold[1] established for the exercise, over time, defining said recurrence as “high”, “medium” or “low”.
- The classification of **Recurrence** alone does not consider two factors that are critical to informing programme design:

[1] For the ICA, trends in food insecurity are analysed, understood and categorised in relation to a food insecurity reference level – or ***threshold*** – that is established with partners for each and every national context. Values falling below the reference level do not imply an absence of food insecurity; rather, the threshold serves to help identify areas that are particularly vulnerable where an underlying component of food insecurity may be found in all areas across national territory.

  - **Magnitude**: by how much do the percentages reported exceed the threshold (*how serious is it*)?
  - **Variability**: is the food insecurity reported constant or does it fluctuate (*how persistent or fluctuating is it*)?
- Different factor combinations suggest distinct food insecurity conditions on the ground that may call for distinct responses.
- More nuanced and distinct realities are used to define what each level of the ICA three-point food security scale contains.
- An evidence-based rationale for classification strengthens the value of the ICA methodology in informing programme.

Applicability

- This revised approach to the ICA food insecurity trends analysis applies to historical food security data that:
  - Is expressed in terms of percentages of households affected (e.g., FSMS data)
  - Comprises multi-year or multi-round data, for which a minimum of five rounds are available.
- This approach does not apply to IPC or other scaled food security classifications.

Methodology

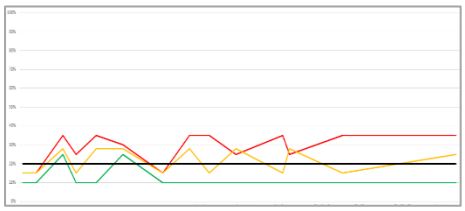
- **Definitions*:***
  - *Time series*: the full set of historical food security data pertaining to a single administrative entity (e.g., district)
  - ***n***: the total number of data points (e.g., number of rounds, years, etc.) in each time series.
  - ***N***: the total number of time series contained in the analysis (e.g., number of districts)
- Every time series is assessed for frequency, magnitude and variability as follows:
  - *Recurrence:*
    - as a COUNT (from 0 to n) of how many times the reported % values exceed the threshold,
    - values are grouped as “high”, “medium” or “low” by terciles for *n*.
  - *Magnitude:*
    - as the difference (+ or -) between the group mean (series average) and the threshold,
    - values are grouped as “high”, “medium” or “low” by terciles for all positive values across *N* (- values = “low”).
  - *Variability:*
    - as the standard deviation (+) of the series, to show how widely values vary within the group,
    - values are grouped as “high”, “medium” or “low” by terciles across all values for N.
- The three factors have important bearings on each other. Every time series should be evaluated considering all three.
- All 27 possible factor combinations have been assigned a “high”, “medium” and “low” ICA food security classification.
- Each time series is classified automatically accordingly (in the Microsoft Excel worksheet).

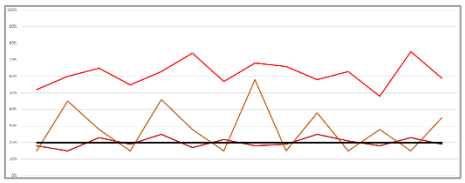
Data considerations

- Recurrence and variability may appear to yield similar classifications. However, the former is determined *in relation to the threshold* while the latter is determined *in relation to the time series*. In this regard, where time series values:
  - Fall close to and around the threshold (low magnitude), recurrence and variability may yield similar classification.
  - Are consistently above threshold (high recurrence and medium/high magnitude) variability remains distinct.
- The ability of the factors to truthfully reflect food insecurity realities is positively correlated to the sizes of ***n*** and ***N***.

Data-driven interpretation

Understanding Recurrence: "How often are households affected beyond the agreed reference level (threshold)?"



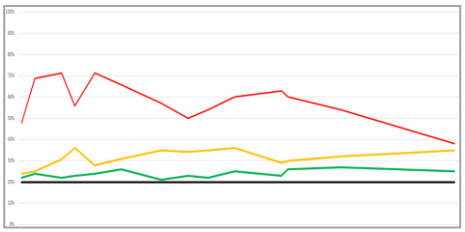


Low. Food insecurity generally affects a percentage of households equal to or below the threshold, suggesting it is persistent but contained. Occasional peaks above the threshold occur when households with fragile resilience are faced with duress. *Food insecurity is rarely above threshold.*

Medium. Food insecurity fluctuates in relation to the threshold suggesting households are shifting back and forth between food secure and insecure states on a recurring basis. *Food insecurity is sometimes above threshold.*

High. Food insecurity is often, if not always, above the established threshold, suggesting persistent food insecurity. High recurrence does not provide a measure of how far above the threshold values are, nor whether they fluctuate or are stable (see second graph, depicting three instances of high recurrence that suggest very different ground conditions). *Food insecurity is often (or always) above threshold.*

Understanding Magnitude: "How much do reported figures differ from the threshold?"

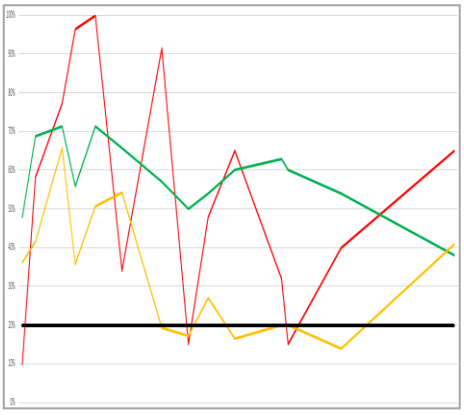


Low. Food insecurity levels are generally slightly above or below the established threshold. *Not many more people are affected.*

Medium. Food insecurity levels are generally somewhat higher than the established threshold. *Quite a few more people are affected.*

High. Food insecurity levels are generally considerably higher than the established threshold. *Many more people are affected.*

Understanding Variability: "Are food insecurity levels constant or do they fluctuate?"



Low. Food insecurity values are very similar over time, suggesting affected households face persistent food insecurity while others are largely resilient to shocks and stressors. *Food insecurity is contained and constant.*

Medium. Food insecurity values vary somewhat over time – but not to great extremes – suggesting some household have more fragile resilience as they fall in and out of food insecurity on an irregular/cyclical basis. *Food insecurity sees moderate spikes.*

High. Food insecurity values vary considerably over time – suggesting extremes and that either a great number of households have fragile resilience to moderate and recurring shocks, or generally household resilience is good, but occasional and severe, high-impact shocks or stressors exceed their coping capacities. *Food insecurity sees severe spikes.*

Classifying emerging scenarios

- Every scenario is allocated to one of the ICA food security classification level (high, medium or low) based on the contextual reality each describes and similarities across descriptions.
- Not all factor combinations reflect likely scenarios, but they are considered for comprehensiveness and retained by the analysis should a given time series correspond.

			Simplified interpretation			
R	M	V	Recurrence	Magnitude (impact on people affected)	Variability	ICA
Low	Low	Low	rarely above	not many more	little variation	Low
Low	Low	Med	rarely above	not many more	some variation	Low
Low	Med	Low	rarely above	quite a few more	little variation	Low

R	M	V	Simplified interpretation Recurrence	Magnitude (impact on people affected)	Variability	ICA
Low	High	Low	rarely above	many more	little variation	Low
Med	Low	Low	sometimes above	not many more	little variation	Low
Med	Low	Med	sometimes above	not many more	some variation	Low
Low	Low	High	rarely above	not many more	great variation	Medium
Low	Med	Med	rarely above	quite a few more	some variation	Medium
Low	Med	High	rarely above	quite a few more	great variation	Medium
Low	High	High	rarely above	many more	great variation	Medium
Low	High	Med	rarely above	many more	some variation	Medium
Med	High	Low	sometimes above	many more	little variation	Medium
Med	Med	Low	sometimes above	quite a few more	little variation	Medium
Med	Low	High	sometimes above	not many more	great variation	Medium
High	Low	Low	often or always above	not many more	little variation	Medium
High	Low	High	often or always above	not many more	great variation	Medium
High	Low	Med	often or always above	not many more	some variation	Medium
Med	Med	High	sometimes above	quite a few more	great variation	High
Med	Med	Med	sometimes above	quite a few more	some variation	High
Med	High	High	sometimes above	many more	great variation	High
Med	High	Med	sometimes above	many more	some variation	High
High	Med	Low	often or always above	quite a few more	little variation	High
High	Med	High	often or always above	quite a few more	great variation	High
High	Med	Med	often or always above	quite a few more	some variation	High
High	High	Low	often or always above	many more	little variation	High
High	High	High	often or always above	many more	great variation	High
High	High	Med	often or always above	many more	some variation	High

Contextual interpretation

- In its final form, the ICA provides programmatic recommendations for the food security/natural shock convergence patterns that the cross-tabulation of the two core dimensions yields.
- The revision to the food insecurity analysis component aims to strengthen and nuance the descriptions and implications of each of the three food insecurity levels. The revised descriptions are:

ICA Food Insecurity Classification and Description	
Low	In these areas the percentage of households experiencing food insecurity generally varies very little over time, falls close to the established threshold and rarely exceeds it; if and when it does occasionally do so, the additional percentage of households affected is not particularly large. This suggests a contained percentage of households face persistent food insecurity, that the majority of the households in these areas are generally resilient, but that contained pockets of households with fragile resilience and susceptible to food insecurity on an episodic basis can be found. *The majority are food secure and either resilient or rarely exposed to shocks. Contained numbers face persistent food insecurity and contained numbers are on the brink.*
Medium	In these areas various food insecurity scenarios can be found. In some areas, the average percentage of households experiencing food insecurity is generally well below the threshold and stable, but there are occasionally moderate or even severe spikes, suggesting many households are generally food secure, but not equipped to cope with unexpected, important shocks or stressors (which can and do occur). In other areas, food insecurity levels are more frequently above the threshold, suggesting a greater number of persistently food insecure households and fewer households on the brink of food insecurity, as fluctuation over time appears less severe. Finally, in some areas, average food insecurity levels are often if not always, somewhat above the threshold, suggesting a greater (but not extreme) number of persistently food insecure households, with many also on the brink of food insecurity as these areas see pronounced fluctuation in percentages over time. *The majority are food secure but ill equipped to face unexpected, important shocks. Somewhat higher numbers face persistent food insecurity, and many others are on the brink, falling in and out of food insecurity occasionally.*
High	In these areas the percentages of households experiencing food insecurity are often if not always considerably above the established threshold, suggesting large segments of the population are affected by persistent food insecurity. At the

ICA Food Insecurity Classification and Description	
	same time, and in addition, percentages vary considerably over time, suggesting many more households fall in and out of food insecurity on a recurring basis. *Large segments of the population are persistently food insecure and many additional households are on the brink, regularly falling in and out recurring food insecurity.*

5.2.2 Population distribution

Population density data was obtained from WorldPop as UN adjusted gridded data for the year 2020 and was aggregated to administrative level 2 and mapped to show the relative distribution of population. This was then overlaid and intersected with the negative land cover change areas and ICA Areas to show areas within districts where there is a convergence of high population within the categorised areas according to food insecurity and natural shock hazard. It should be noted that the WorldPop dataset used here is not based on actual census data but modelled data and thus could have inherent inaccuracies in capturing the actual spatial distribution population figures for each district. A population threshold of 33 people per km^2 was used to map out areas with high population density.

5.3 Natural shocks

The natural shocks analysis was carried out using data on drought and floods. Data for each of these shocks was analysed using administrative boundary 02 which in Zimbabwe is called district. The combined drought and flood score ranged from 2 to 6.

5.3.1 Drought

Drought occurrences were inferred using the RE, and was aggregated to the Admin02. It should be noted that Drought data were obtained from the CHIRPS Rainfall Estimates (RFE) and were available from 1981 through 2018. RFE datasets from WFP HQ showed ranges of poor growing seasons classified and summed per pixel over time. The majority of occurrences per district was calculated to represent the Number of Poor Growing Seasons (NPGS).

The key indicator used was the overall number of poor growing seasons, with the range of values classified by the ICA as indicated below.

NPGS per District			
Number of Poor Growing Seasons	**Low value (8-10)**	**Medium value (11-12)**	**High value (13-15)**
ICA Reclassification	LOW (1)	MEDIUM (2)	HIGH (3)

5.3.2 Floods

Flood data was obtained from the Joint Research Centre Flood hazard data (JRC). The data was projected to UTM 35S for Zimbabwe, and zonal statistics tool was used to extract data at district level. Flood hazard score was calculated by considering the percentage of the expected surface at flood hazard and the maximum expected flood depth over a 100-year return period. Using this method, 30% of Zimbabwe was classified as flood risk with notable areas falling along the Zambezi basin as well as the Limpopo basins. These are also characterised as low-lying areas of Zimbabwe. It is interesting though to note that recent floods caused by tropical cyclones notably in Chimanimani, Nyanga and Chipinge have not been classified as risky despite the devastating effects on lives and livelihoods.

% of surface area affected by flood			
% of surface area affected	2%	3 – 5%	> 5%
ICA Reclassification	LOW (1)	MEDIUM (2)	HIGH (3)

(Maximum expected flood depth			
(Maximum Expected Flooding	2 events	3-4 events	5-6
ICA Reclassification	LOW (1)	MEDIUM (2)	HIGH (3)

Flood exposure by district			
Combined flood factors	Low (1)	Medium (2)	High (3)
Low (1)	Very Low	Low	Moderate
Medium (2)	Low	Moderate	High
High (3)	Moderate	High	Very High

Flood exposure by district			
Flood exposure (% territory affected x Maximum flood depth	**2**	**3**	**4**
ICA Reclassification	LOW (1)	MEDIUM (2)	HIGH (3)

5.4 Combined severity of Natural shocks

The categorisation in this regard combined the flood and drought hazard classes as shown in the table below.

Combined Severity of Natural Shocks (Drought and Floods)			
Combined exposure to Natural Shocks by District	Low (1)	Medium (2)	High (3)
Low (1)	Very Low	Low	Moderate
Medium (2)	Low	Moderate	High
High (3)	Moderate	High	Very High

Combined exposure by Natural Shock			
Combined risk of natural shocks	**2**	**3**	**4-5**
ICA Reclassification	LOW (1)	MEDIUM (2)	HIGH (3)

5.5 Land degradation

The assessment of land degradation was done using the following key indicators (1) average land cover (computed from the NASA MODIS land cover product MCD12Q) and (2) the percentage of erosion-prone surface aggregated within each second-level administrative region (the district) in Zimbabwe. Landcover change analysis entailed sub-setting/clipping of the MCD12Q global landcover product using the Admin 0 level shapefile of Zimbabwe, reprojecting the data for the time period Time 1 (2001-2008) and Time 2 (2011-2018) and then using raster calculator to compute the average landcover change between the two-time periods at Admin level 2. The landcover classes were adopted from the WFP ICA land cover classification classes, which make use of a generalization of the land cover classes identified by the International Geosphere-Biosphere Programme (IGBP) according to Costanza (1997).

The soil erosion analysis entailed the implementation in ArcGIS of the Revised Universal Soil Loss Equation (RUSLE), use of gridded rainfall incidence data (from FAO GeoNetwork, 2000), soil lithology data (from the global soil dataset), land cover (for the year 2018 NASA MODIS dataset) and slope length (calculated from the using NASA SRTM Digital Elevation Model (DEM) with 15seconds horizontal resolution). To visualise the erosion propensity variation in greater detail, the Bergsma classification (ranging from very low to very high) erosion propensity was used instead of the standard WFP three level scale). It was noted (on trial) that the Bergsman classes depicted a more realistic picture of the typical erosion scenarios based on our background knowledge of the Zimbabwean context.