



CLICC Phase 2 Pilots – Zimbabwe

DRAFT outputs for cross-pilot QA

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This document presents **observed** and **projected** climate impacts in Zimbabwe using the Country Level Impact of Climate Change (CLICC) templates. The templates have been specifically designed primarily for countries to collate and present a synthesis of **existing** information. While the presentation of the impacts for Agriculture and Water is based on a synthesis of available literature, it also supported by expert judgement.

Table 1: Observed climate impacts

Sector	Observed climate impacts	Global impact rating	National impact rating	Confidence rating	Data quality rating	Time period	Metadata identifier(s)
AGRICULTURE		Medium-High	Medium-High	Medium-High	Low-High	1992-2019	1.1
Crops	Reduced crop yield caused by heat and drought stress. Economic losses due to severe reductions in crop yields caused by frequent floods and droughts.	Medium-High	Medium-High	Medium-High	Low-High	1992-2019	1.1
Livestock	Spread of pests and diseases, causing increased animal mortality due to heat and floods.	Medium-High	Medium-High	Medium-High	Low-High	1992-2019	1.1
WATER		Low-High	High	Medium-High	Low-High	2001-2018	1.2
Water supply	Water quantity and quality disrupted due to increased frequency of droughts and floods leading to insufficient water for human needs.	Low-High	Medium-High	High	Low-High	2001-2018	1.2
Surface water management	Reduction in surface water due to increased evaporation resulting from higher temperatures.	Medium	Low-Medium	Medium	Low-High	2001-2018	1.3
Ground water management	Recharge rate is very low due to decline in precipitation.	Medium	Medium-High	Low	Low-High	2001-2018	1.3

Table 2: Projected climate impacts

Sector	Projected climate impacts	Impact rating	Confidence rating	Data quality rating	Time period	Metadata identifier(s)
AGRICULTURE		Low-Medium	Low-Medium	Low-High	2016-2019	1.3
Crops	Reduction in crop yields due to decreasing rainfall and increasing temperatures. Increase in food shortages due to extreme floods and droughts.	Low-High	Medium-High	Low-High	2016-2019	1.4
Livestock	Decrease in livestock survival due to a rise in temperature and fall in annual precipitation which will lead in increase in diseases.	Low-Medium	Medium-High	Low-High	2016-2018	1.4
WATER		Low-High	Medium-High	Low-High	2015-2019	1.4
Water Supply	Decrease in water supply both for irrigation and households due to droughts.	Low-Medium	Medium-High	Low-High	2015 - 2019	1.4
Water Treatment	Increased sediments load due to increased frequency of cyclones and floods will require more chemical treatment.	High	Medium	Low-High	2015 – 2019	1.5
Water Collection	Increased need for water collection due to increased severity and frequency of droughts.	High	Medium	Low-High	2015 - 2019	1.6
Surface water management	Increased pollution and reduced water quality due to floods and cyclones.	Medium	Medium	Low-High	2015-2019	1.6

Sector	Projected climate impacts	Impact rating	Confidence rating	Data quality rating	Time period	Metadata identifier(s)
Ground water management	Decrease in water table caused by droughts.	High	Medium	Low-High	2015-2019	1.6

Table 3: Definitions of national ratings of observed impacts (which for Zimbabwe are the same as the definitions of global ratings)

Observed impacts	Economic	Social	Environmental
High	Major damage and disruption (~£100 million)	Potential for many fatalities or serious harm or major disruption (~ millions affected, thousands harmed, hundreds of fatalities)	Major or widespread loss or decline in long-term quality of valued habitats (~5,000 hectares lost/gained, ~10,000km river water quality affected)
Medium	Moderate damage and disruption (~£10 million)	Significant numbers affected (~hundreds of thousands affected, hundreds harmed, tens of fatalities)	Medium term or moderate loss (~500 hectares lost/gained, ~1,000km river water quality affected)
Low	Minor damage and disruption (~£1 million)	Small numbers affected/within coping range (tens of thousands affected etc.)	Short-term / reversible / local effects (~50 hectares lost/gained, ~100km river water quality affected)

Table 4: Data quality tables

Dataset		National Climate Policy (2016)	
Data quality criteria	Levels	Score	
1. Transparency and auditability	1. Data unavailable to public		
	2. Limited summary data available		
	3. Full raw/primary data set and metadata available	3	
2. Verification	1. Unverified data		
	2. Limited verification checks in place	2	
	3. Detailed verification in place and documented		
3. Frequency of updates	1. Sporadic	1	
	2. Every 3-5 years		
	3. Annual or biennial		
4. Security	1. Future data collection discontinued		
	2. Future data collection uncertain	2	
	3. Future data collection secure		
5. Spatial coverage	1. Partial national coverage	1	
	2. National coverage, some bias		
	3. Full national coverage, including adjacent marine areas, if and where appropriate		
TOTAL SCORE		9	
RATING		Medium	

Dataset		ZIMVAC reports (2012-2018)	
Data quality criteria	Levels	Score	
1. Transparency and auditability	1. Data unavailable to public		
	2. Limited summary data available	2	
	3. Full raw/primary data set and metadata available		
2. Verification	1. Unverified data		
	2. Limited verification checks in place	2	
	3. Detailed verification in place and documented		
3. Frequency of updates	1. Sporadic		
	2. Every 3-5 years		
	3. Annual or biennial	3	
4. Security	1. Future data collection discontinued		

Dataset	ZIMVAC reports (2012-2018)	
	2. Future data collection uncertain	2
	3. Future data collection secure	
5. Spatial coverage	1. Partial national coverage	
	2. National coverage, some bias	2
	3. Full national coverage, including adjacent marine areas, if and where appropriate	
TOTAL SCORE		11
RATING		High

Dataset	Third National Communication to the United Nations Framework Convention on Climate Change (2016)	
Data quality criteria	Levels	Score
1. Transparency and auditability	1. Data unavailable to public	1
	2. Limited summary data available	
	3. Full raw/primary data set and metadata available	
2. Verification	1. Unverified data	
	2. Limited verification checks in place	
	3. Detailed verification in place and documented	3
3. Frequency of updates	1. Sporadic	1
	2. Every 3-5 years	
	3. Annual or biennial	
4. Security	1. Future data collection discontinued	
	2. Future data collection uncertain	2
	3. Future data collection secure	
5. Spatial coverage	1. Partial national coverage	1
	2. National coverage, some bias	
	3. Full national coverage, including adjacent marine areas, if and where appropriate	
TOTAL SCORE		8
RATING		Low

Dataset	Zimbabwe National Climate Response Strategy (2014)	
Data quality criteria	Levels	Score
	1. Data unavailable to public	

Dataset	Zimbabwe National Climate Response Strategy (2014)	
1. Transparency and auditability	2. Limited summary data available	2
	3. Full raw/primary data set and metadata available	
2. Verification	1. Unverified data	
	2. Limited verification checks in place	2
	3. Detailed verification in place and documented	
3. Frequency of updates	1. Sporadic	1
	2. Every 3-5 years	
	3. Annual or biennial	
4. Security	1. Future data collection discontinued	
	2. Future data collection uncertain	2
	3. Future data collection secure	
5. Spatial coverage	1. Partial national coverage	1
	2. National coverage, some bias	
	3. Full national coverage, including adjacent marine areas, if and where appropriate	
TOTAL SCORE		9
RATING		Medium

Dataset	IPCC (2007)	
Data quality criteria	Levels	Score
1. Transparency and auditability	1. Data unavailable to public	
	2. Limited summary data available	2
	3. Full raw/primary data set and metadata available	
2. Verification	1. Unverified data	
	2. Limited verification checks in place	2
	3. Detailed verification in place and documented	
3. Frequency of updates	1. Sporadic	1
	2. Every 3-5 years	
	3. Annual or biennial	
4. Security	1. Future data collection discontinued	
	2. Future data collection uncertain	2
	3. Future data collection secure	
5. Spatial coverage	1. Partial national coverage	1

Dataset	IPCC (2007)	
	2. National coverage, some bias	
	3. Full national coverage, including adjacent marine areas, if and where appropriate	
TOTAL SCORE	9	
RATING	Medium	

Table 5: Metadata for observed climate impacts on the Agriculture sector

Metadata identifier	1.1.
Source(s)	<p>Primary source:</p> <ul style="list-style-type: none"> • Government of Zimbabwe (2016): Zimbabwe Climate Policy 2016 • Government of Zimbabwe (2014): National Climate Change Response Strategy 2014 • IPCC (2007): Contribution of Working Group II to the Fourth Assessment Report of the Intergovernmental Panel on Climate Change, 2007; M.L. Parry, O.F. Canziani, J.P. Palutikof, P.J. van der Linden and C.E. Hanson (eds); Cambridge University Press, Cambridge, United Kingdom and New York, NY, USA • Government of Zimbabwe (2016): Third National Communication to the United Nations Framework Convention on Climate Change 2016 <p>Other sources:</p> <ul style="list-style-type: none"> • Lambrou and Piana (2006), Cutin, P S et al (1978) African History Longman, Sage Publishers, London, Downing,T (2007) Climate Change and Vulnerable Places Global Food Security And Country Studies In Zimbabwe. • Food and Agriculture Organisation, (FAO), http://www.fao.org/sd/dim, Retrieved 12/09/2011.
Explanation for impact rating	<p>Medium-High: During the wet-season in 2004 (October-March), rainfall in Zimbabwe was markedly low and it causes a decrease in the trend.</p> <p>Possible high rating of the impacts implies that the impact coverage was wide, and frequency of the impact was high. For example, maize is the dominant crop produced in Zimbabwe, occupying more than 50 per cent of available agricultural land and is critically important to livelihoods. Agriculture is one of Zimbabwe's most climate sensitive sectors given the close relationship between levels of agricultural production and rainfall. Approximately 80% of the rural population livelihoods are dependent on rain fed agriculture making them highly vulnerable to climate change induced weather extremes, variability and climate change impact. Research in Zimbabwe has revealed that most rural Zimbabweans live in semi-arid zones and will suffer disproportionately from the emerging impacts of climate change and variability including disasters associated with extreme weather events such as droughts, periodic flooding, disease outbreaks for both human and livestock and loss of crop lands. Food shortages have become a perennial feature resulting in a high prevalence of undernourishment estimated at 30 to 54 per cent between 2006 and 2012. In 2019, a cyclone hit Zimbabwe and Farmers say cyclone winds and floods destroyed fields in Chipinge and</p>

Metadata identifier		1.1.
		Chimanimani, worsening Zimbabwe's food insecurity. Millions of people are affected, thousands harmed, hundreds of fatalities. 39 million hectares gained from the environment which led to destruction in animal habitats, about 24 000km river water quality affected in Zimbabwe due to Climate Change.
Explanation for confidence rating		Medium-High: Available literature agrees on the dominating impacts of frequent and severe floods and droughts on the agriculture sector in Zimbabwe. The sector suffers the greatest losses, for example the country is losing US\$ 126 million yearly in the Agricultural sector. The confidence scores outlined in the ZIMVAC Reports (2014-2018) advanced an inclusive, broad based, and sustained process for assessing and communicating scientific knowledge of the impacts, risks, and vulnerabilities associated with a changing global climate in support of decision-making across Zimbabwe.
Climate projections, emissions scenarios, or models used		ZIMVAC Reports (2012-2018). The method for these reports has expanded on the response function approach through using a wider range of evidence from a literature review.
Dataset(s)		ZIMVAC Reports inform the nation about already observed changes, the current status of the climate, and anticipated trends for the future; integrates scientific information from multiple sources and sectors to highlight key findings and significant gaps in our knowledge; establishes consistent methods for evaluating climate impacts in Zimbabwe.
Additional assumptions		None
Additional limitations		None

Metadata identifier		1.2
Source(s)		<p>Primary source:</p> <ul style="list-style-type: none"> • Government of Zimbabwe (2016): Zimbabwe Climate Policy 2016 • Government of Zimbabwe (2014): National Climate Change Response Strategy 2014 • IPCC (2007): Contribution of Working Group II to the Fourth Assessment Report of the Intergovernmental Panel on Climate Change, 2007; M.L. Parry, O.F. Canziani, J.P. Palutikof, P.J. van der Linden and C.E. Hanson (eds); Cambridge University Press, Cambridge, United Kingdom and New York, NY, USA • Zimbabwe and UN (2001): Zimbabwe and United Framework Convention on Climate Change 2001, Peter G. H. Frost Institute of Environmental Studies, University of Zimbabwe. <p>Other sources:</p> <ul style="list-style-type: none"> • Environment Research Coordinating Committee (1998) 'Strategic Directions for Environmental Research in Zimbabwe'. Institute of Environmental Studies, UZ, Harare, Zimbabwe. • Government of Zimbabwe (1998) 'ZIMPREST: Zimbabwe Programme for Economic and Social Transformation 1996-2000'. Government Printer, Harare, Zimbabwe. • Government of Zimbabwe (2000) 'Zimbabwe Millennium Economic Recovery Programme'. Working Draft/Rev 5, 4

Metadata identifier 1.2	
	February 2000. Government of the Republic of Zimbabwe, Harare. 81 pp. Typescript.
Explanation for impact rating	Low-High. Loss of livestock due to increased temperatures and reduced rainfall. Occurrence of extreme rainfalls kill livestock e.g. cyclones, 2019 cyclone Idai washed away livestock in Chipinge and Chimanimani districts.
Explanation for confidence rating	Medium-High: Extreme climate events alternating between drought and floods are increasingly occurring every year in the country. This suggests that the average annual impact might become even greater in the future. However, spatial coverage of floods responsible for economic losses are generally localized in watershed areas. This limited coverage creates localized impacts such as crop and soil losses; hence the rating is medium. However, the impacts are felt on the national economy hence the rating is high.
Climate projections, emissions scenarios, or models used	The major models used are the ZIMVAC reports (2012-2018) models.
Dataset(s)	ZIMVAC Reports (2012-2018)
Additional assumptions	None
Additional limitations	Observed increased temperatures and rainfall in northern region has been on a short time scale. The observed impacts have not been comprehensively documented.

Metadata Identifier 1.3	
Source(s)	<p>Primary source:</p> <ul style="list-style-type: none"> • Government of Zimbabwe (2016): Zimbabwe Climate Policy 2016 • Government of Zimbabwe (2014): National Climate Change Response Strategy 2014 • IPCC (2007): Contribution of Working Group II to the Fourth Assessment Report of the Intergovernmental Panel on Climate Change, 2007; M.L. Parry, O.F. Canziani, J.P. Palutikof, P.J. van der Linden and C.E. Hanson (eds); Cambridge University Press, Cambridge, United Kingdom and New York, NY, USA • Government of Zimbabwe (2016): Third National Communication to the United Nations Framework Convention on Climate Change 2016 • Zimbabwe and UN (2001): Zimbabwe and United Framework Convention on Climate Change 2001, Peter G. H. Frost Institute of Environmental Studies, University of Zimbabwe. <p>Other sources:</p> <ul style="list-style-type: none"> • Lambrou and Piana (2006), Cutin, P S et al (1978) African History Longman, Sage Publishers, London , Downing,T (2007) Climate Change and Vulnerable Places Global Food Security And Country Studies In Zimbabwe. • Food and Agriculture Organisation, (FAO), http://www.fao.org/sd/dim, Retrieved 12/09/2011. • Environment Research Coordinating Committee (1998) 'Strategic Directions for Environmental Research in Zimbabwe'.

Metadata Identifier		1.3
		<p>Institute of Environmental Studies, UZ, Harare, Zimbabwe.</p> <ul style="list-style-type: none"> • Government of Zimbabwe (1998) 'ZIMPREST: Zimbabwe Programme for Economic and Social Transformation 1996-2000'. Government Printer, Harare, Zimbabwe. • Government of Zimbabwe (2000) 'Zimbabwe Millennium Economic Recovery Programme'. Working Draft/Rev 5, 4 February 2000. Government of the Republic of Zimbabwe, Harare. 81 pp. Typescript.
Explanation for impact rating		<p>Low-Medium: In Zimbabwe, currently there are some researched climate change impacts on Agriculture from 1990s up to 2019. Between 1993 and 2000, average annual maize production stood at 1.64 million tonnes before dropping to 1.08 million tonnes between 2001 and 2008. In addition, the average yield for maize during the 2009-2010 farming season was 0.7 tonnes per hectare, down from 0.85 tonnes per hectare in 2008-2009. In 2007, only 45 per cent of national cereal requirements were produced in the country, leaving a deficit of over 610,000 metric tonnes to be covered by imports (FEWSNET, 2007). Similarly, cattle population declined from approximately 6.1 million in 2000 to 5 million in 2011, while dairy production dropped from over 100,000 cows in 2000 to approximately 22,000 cows in 2010. Rising temperatures and increasing rainfall variability, notably drought, are also expected to exacerbate declining agricultural outputs, further compromising economic growth and stability, employment levels, food insecurity, demand for other goods, and poverty reduction.</p>
Explanation for confidence rating		<p>Low-Medium: The rating is based on the understanding that there is no increase in rainfall. This suggest that heavy precipitation as events has not been significant especially when it comes to crop production.</p>
Climate projections, emissions scenarios, or models used		<p>Projected increase in annual precipitation by 2030 which will also lead to an increase in Agricultural productivity.</p>
Dataset(s)		ZIMVAC Reports (2012-2018)
Additional assumptions		None
Additional limitations		None

Table 6: Metadata for observed climate impacts on the Water sector

Metadata identifier		1.4
Source(s)		<p>Primary source:</p> <ul style="list-style-type: none"> • Anna Brazier (2015). Climate Change in Zimbabwe A guide for planners and decision makers. • Zimbabwe's National Climate Change Response Strategy. • Zimbabwe Meteorological Services Department Climate Issues and Facts: Zimbabwe. By Chamunoda Zambuko (Meteorologist) • ZIMVAC Reports (2012-2018)
Explanation for impact rating		<p>Low-High: As year-to-year variability in rainfall is very high in Zimbabwe, long-term trends are difficult to identify. This year 2019,</p>

Metadata identifier 1.4	
	<p>there is no rainfall causing serious drought. Also, in 2018, some parts of the country didn't receive enough rainfall.</p> <p>Possible high rating of the impacts implies that the impact coverage was wide, and frequency of the impact was high. For example, maize is by far the dominant crop produced in Zimbabwe, occupying more than 70 per cent of available agricultural land and is critically important to livelihoods. Flooding in low-lying areas where productivity is inherently high affected almost the whole country in terms of food availability stability and accessibility. The alternation with droughts in the high areas complicates crop productivity.</p> <p>For example, drought resulted in maize output decline this year in 2019. Severe droughts continue to hit the country, 80% decline in maize output was experienced compared with previous years. On floods, the country experienced Heavy floods in 2015 followed by drought. Thus, frequency of drought and floods gives high rating on the impacts. Thus, pattern of agricultural production is not currently resilient to the current climate and high levels of climate variability. Hence, evidence does not reveal consistent decreases.</p>
Explanation for confidence rating	Medium-High: Available literature agrees on the dominating impacts of frequent and severe floods and droughts causing serious impacts on the Water sector in Zimbabwe. There is a general agreement that the Water sector suffers the greatest losses, causing declines in the agricultural sector. Furthermore, the literature and experts agree that low agriculture productivity resulting from climate change ensuing food shortages cause domestic grain prices to rise while grain imports increase rapidly to cover the shortfall. A reduction in runoff of 26 to 40% in the Zambezi river system, as a result of reduced rainfall and increased evaporation
Climate projections, emissions scenarios, or models used	None
Dataset(s)	ZIMVAC Reports (2012-2018)
Additional assumptions	N/A
Additional limitations	Yield reduction observed in crops across the country are associated with many compounding factors besides climate change. The factors include soil erosion, poor soil fertility and poor farming practices and shortages of agricultural inputs. These factors are not fully accounted for.

Metadata identifier 1.5	
Source(s)	<ul style="list-style-type: none"> • Government of Zimbabwe (2017). Strategic Program for Climate Resilience: Zimbabwe Pilot Program on Climate Resilience. • Government of Zimbabwe (2017). Strategic Planning for Climate Resilience: Zimbabwe Pilot Program on Climate Resilience. • Government of Zimbabwe (2017). The Republic of Zimbabwe Ministry of Environment, Water and CLIMATE (National Climate Policy). • IPCC (2007): Contribution of Working Group II to the Fourth

Metadata identifier 1.5	
	<p>Assessment Report of the Intergovernmental Panel on Climate Change, 2007; M.L. Parry, O.F. Canziani, J.P. Palutikof, P.J. van der Linden and C.E. Hanson (eds); Cambridge University Press, Cambridge, United Kingdom and New York, NY, USA</p> <ul style="list-style-type: none"> Renewable Energy (2017), Taking the Agendas and Actions to the People. UNDP/UNEP, Ministry of Finance and Development Planning, Zimbabwe.
Explanation for impact rating	High: Over 90 % of water is not safe to drink. Increases in the frequency of droughts has once diminished water supplies. This in turn affected our drinking water and as a nation there is no enough money to chemicals to treat the water. Even if climate change brings an increase in polluting the water will be more than offset by the coming years because of the cyclones we are facing This situation has not changed for the past five years. Second, Intense rainstorms combined with ongoing degradation of upstream catchments also contributes to a rise in siltation and sedimentation, adversely affecting the country's safe water.
Explanation for confidence rating	High: Water Management in Zimbabwe has been observed year after year since 1990. Many studies agree on the observed reduction of hydropower generation. However, one study has suggested climate change will have only a small effect on water in Zimbabwe, the impacts of climate change on water management, although not documented is very high since they direct affect national Health growth.
Climate projections, emissions scenarios, or models used	None
Dataset(s)	ZIMVAC Reports (2012-2018)
Additional assumptions	None
Additional limitations	None

Metadata identifier 1.6	
Source(s)	<p>Primary source:</p> <ol style="list-style-type: none"> Zimbabwe's National Climate Change Response Strategy ZIMVAC Reports (2012-2018) Zimbabwe Meteorological Services Department
Explanation for impact rating	Medium-High: Climatic Hazards are already occurring and impacting human settlements causing loss of life, social disruption and economic hardships. Such hardships are already being heavily felt by the poor in most parts of Zimbabwe. Reduced water supply due to droughts Greater incidence of diseases such as diarrhea, malaria and cholera due to reduced water quality, higher temperatures and increased flooding by Anna Brazier (2015).
Explanation for confidence rating	Medium: The total amount of rainfall received during a typical rainy season has fallen by about 5% since 1900. Droughts and floods have consequently increased in frequency since 1990 often occurring back to back with a flood year immediately following a drought year. Most at threat will be water resources. The World Bank together with the government of

Metadata identifier	1.6
Climate projections, emissions scenarios, or models used	<p>Zimbabwe produced a report that there will be less water for irrigation, energy generation for mining, manufacturing and commerce, tourism and human health and 38% decline in national per capita water availability by 2050.</p> <p>Main authors of Climate Change in Zimbabwe document: Ann Brazier (2015), ZIMVAC Reports (2013 – 2017)</p>
Dataset(s)	<p>The analysis for this Evidence Report has been conducted through a literature review of the available evidence sources including the below to a lesser extent</p> <ul style="list-style-type: none"> • Anna Brazier (2015) Climate Change in Zimbabwe 1st Edition, • Zimbabwe National Climate Change Policy. • ZIMVAC Reports (2012-2018)
Additional Limitations	None