

Executive Summary

Zimbabwe Human Development Report **2017**

Climate Change and Human Development:
Towards Building a Climate Resilient Nation



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Zimbabwe Human
Development Report 2017

**Climate Change and Human Development:
Towards Building a Climate Resilient Nation**

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Published for the Government of Zimbabwe and United Nations Development Programme
Zimbabwe with generous support from the Embassy of Sweden in Zimbabwe



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LIST OF ABBREVIATIONS

ABR	Adolescent Birth Rate	IES	Institute of Environmental Studies
AIDS	Acquired Immune Deficiency Syndrome	IFRC	International Federation of the Red Cross
AMTO	Assisted Medical Treatment Order	IHDI	Inequality-adjusted Human Development Index
ART	Antiretroviral Therapy	IIED	International Institute for Environment and Development
BEAM	Basic Education Assistance Module	ILO	International Labour Organisation
CAFOD	Catholic Agency for Overseas Development	IPCC	Intergovernmental Panel on Climate Change
CAMPFIRE	Communal Areas Management Programme for Indigenous Resources	IQ	Intelligence Quotient
CARE	Cooperative for Assistance and Relief Everywhere	LprF	Labour market participation rate for Females
CCVI	Climate Change Vulnerability Index	LprM	Labour market participation rate for Males
CNFA	Cultivating New Frontiers in Agriculture	LULUCF	Land Use, Land Use Change and Forestry
CO₂ eq	Carbon Dioxide equivalent	MICS	Multiple Indicator Cluster Survey
CoP	Conference of Parties	MIMS	Multiple Indicator Monitoring Survey
CREATE	Consortium for Research on Education Access, Transitions and Equity	MMR	Maternal Mortality Rate
DfiD	Department for International Development	MPI	Multidimensional Poverty Index
DHIS	District Health Information Software	MYS	Mean Years of Schooling
DPSIR	Drivers, Pressures, State, Impact, Responses	NER	Net Enrolment Rate
ENSURE	Enhancing Nutrition, Stepping up Resilience and Enterprise	NGO	Non Governmental Organisation
EPI	Environmental Performance Index	°C	Degree Celcius
ESAP	Economic Structural Adjustment Programme	OECD	Organisation for Economic Cooperation and Development
ESP	Empowerment by share of seats in Parliament held by women	OHCHR	Office of the United Nations High Commissioner for Human Rights
EU	European Union	OPC	Office of the President and Cabinet
EYS	Expected Years of Schooling	OPHI	Oxford Poverty and Human Development Initiative
FAO	Food and Agriculture Organisation	ORAP	Organisation of Rural Associations for Progress
FDG	Focus Group Discussion	OXFAM	Oxford Committee for Famine Relief
FRESH	Focus Resources on Effective School Health	PEPFAR	President's Emergency Plan for AIDS Relief
GDI	Gender Development Index	PPP	Purchasing Power Parity
GDP	Gross Domestic Product	SADC	Southern African Development Community
GHI	Global Hunger Index	SAFIRE	Southern Alliance for Indigenous Resources
GII	Gender Inequality Index	SARUA	Southern African Regional Universities Association
GIEWS	Global Information and Early Warning System of the FAO	SDG	Sustainable Development Goal
GNI	Gross National Income	SecF	Attainment of at least secondary education by Females
GPI	Gender Parity Index	SecM	Attainment of at least secondary education by Males
HDI	Human Development Index		
HDR	Human Development Report		
HEWS	Humanitarian Early Warning Service		
HIV	Human Immunodeficiency Virus		
ICT	Information and Communications Technology		

SIDA	Swedish International Development Cooperation Agency	UNFCCC	United Nations Framework Convention on Climate Change
SMS	Short Message Service	UNICEF	United Nations Children's Fund
SNV	Stichting Nederlandse Vrijwilligers (Netherlands Development Organisation)	US	United States
STEM	Science, Technology, Engineering and Mathematics	USAID	United States Agency for International Development
UK	United Kingdom	USD	United States Dollar
UN	United Nations	WASH	Water, Sanitation and Hygiene
UNDP	United Nations Development Programme	WFP	World Food Programme
UNEP	United Nations Environment Programme	WHO	World Health Organisation
UNESCO	United Nations Educational Scientific and Cultural Organisation	ZHDR	Zimbabwe Human Development Report
		ZIMASSET	Zimbabwe Agenda for Sustainable Socio-Economic Transformation
		ZIMSTAT	Zimbabwe National Statistics Agency
		ZIMVAC	Zimbabwe Vulnerability Committee
		ZRBF	Zimbabwe Resilience Building Fund

FOREWORD

Climate change is one of the most significant development challenges facing humanity today. In addition to destruction of our only planet, it affects people directly, their livelihoods and their wellbeing directly, thus having adverse effects on human development. Climate change is a significant threat to Zimbabweans and the Government of Zimbabwe regards climate as a top priority in its development efforts. A better understanding of the effects of climate change on human development is imperative to combatting climate change and it is with this objective that the Government of Zimbabwe and the United Nations Development Programme (UNDP) launched the production of the Zimbabwe Human Development Report on Climate Change and Human Development: Towards Building a Climate Resilient Nation.

The report was prepared by an independent team of experts in consultation with a broad constituency, including provincial and district planners, and communities, in a true spirit of human development. It uses the 'Drivers, Pressures, State, Impact, Responses' (DPSIR) framework, formulated by the United Nations Environment Programme (UNEP) to analyse the interactions between climate change and human development. Considering the key climate related development challenges, the report focusses on four human development themes, namely, livelihoods, food security, health and education.

A wealth of information is presented in terms of the status of climate effects and human development, and their interactions. As the report asserts, Zimbabwe is a high climate risk country because of high vulnerability of climate changes on its population and exposure to climate-related events such as frequent droughts, and reliance on agricultural land that is both flood and drought prone. In addressing these adverse effects, the Government of Zimbabwe has committed itself to implementing or domesticating international policy agreements that strengthen the country's adaptive capacity and resilience in the face of climate change, including launching a National Climate Change Response Strategy. However, a lot more needs to be done to minimise the effects of climate change on broader human development and the solutions that this report articulates could be of immense help. Among them are: strengthening the capacity of relevant institutions to forecast disasters and disseminate early warning to the people; mainstreaming disaster risk management; building resilience to climate-related shocks and stresses; improving disaster response measures and actions; adopting appropriate agro-ecological and climate resilient agricultural practices; mapping land and crop suitability; and enhancing social safety nets, to list a few. More importantly, the report suggests how the responses in terms of policies, strategies, legislation, institutional arrangements and actions can be tailored to make all sectors and the Zimbabwean population more resilient to climate change.

We hope that this report will reach and appeal to a wide audience to spur constructive public debate, change perceptions and priorities at the national level and garner support for action.

Bishow Parajuli

UN Resident Coordinator and UNDP Resident Representative

Misheck. J. M. Sibanda

Chief Secretary to Cabinet and President

ACKNOWLEDGEMENTS

The production of the Zimbabwe National Human Development Report 2017, titled *Climate Change and Human Development: Towards Building a Climate Resilient Nation*, was guided by Dr. Misheck J. M Sibanda, Chief Secretary to the President and Cabinet (OPC), and Mr. Bishow Parajuli, UN Resident Coordinator and UNDP Resident Representative in Zimbabwe. The process was supervised by Mr. Justin Mupamhanga, Deputy Chief Secretary, OPC and Chair of the Steering Committee, supported by Ambassador Boniface Chidyausiku at OPC. Chief Technical Advisors to the production of the report were Dr. Desire Sibanda and Dr. Judith Kateera, former and current Permanent Secretaries of the Ministry of Macroeconomic Planning and Investment Promotion, Mr. Prince Mupazviriho, Permanent Secretary of the Ministry of Environment, Water and Climate, and Mr. Georges Van Montfort and Mr. Amarakoon Bandara, Country Director and Senior Economic Advisor at United Nations Development Programme, respectively. Mr. Anderson Chiraya at OPC, Mr. Taguma Mahonde and Mr. Gratiano Nyaguse at the Ministry of Macroeconomic Planning and Investment Promotion, and Mr. Tirivanhu Muhwati at the Ministry of Environment, Water and Climate, provided technical and administrative support.

Several experts contributed to writing the report. The team of consultants was led by Prof. Sara Feresu, Director, Institute of Environmental Studies at the University of Zimbabwe. She was responsible for the overall conceptualisation, coordination, collation, synthesis and editing of the report, as well as the Introduction chapter, Climate Change Background chapter, the Recommendations chapter, and the infusion of climate change into the whole report. Other members of the team included Dr. Easter Chigumira (Food security and Livelihoods chapters and aspects), Mr. Benson Zwizwai (Education and Health chapters and aspects), and Dr. Gibson Mandishona (report indices and Annexes). The Steering Committee, which had representation from all ministries, provided valuable advice throughout the process of producing the Zimbabwe Human Development Report. The Human Development Report Office in New York, led by Jonathan Hall, provided guidance and technical support throughout the report production process.

The report was reviewed by Ms. Amie Gaye. It benefitted greatly from the Readers Group, comprised of Ms. Veronica Gundu (Ministry of Environment, Water and Climate), Mr. Samson Muradzikwa (UNICEF), Ms. Carolyn Medel-Anonuevo (UNESCO), Mr. Adolphus Chinomwe (ILO), Dr. Kwame Gbesemete (WHO), and Mr. Leonard Unganai (Oxfam). Valuable comments were received from Ms. Anne Madzara, Ms. Sidsel Vogensen, Mr. Udo Etukudo and Ms. Ethel Bangwayo of UNDP. The report was edited by Ms. Megan Alardice. Mr. Anesu Freddy, Communications Assistant of UNDP, prepared the cover design and layout of the report.

The Government of Zimbabwe and the United Nations Development Programme wish to acknowledge with appreciation the financial support of the Swedish International Development Agency (SIDA) to produce this report.

EXECUTIVE SUMMARY

Zimbabwe adopted the publishing of a National Human Development Report in 1998 and had so far published four reports addressing the most pressing issues at the time of publication. The 1998 Zimbabwe Human Development Report (ZHDR) focused on Poverty, 1999 on Globalisation; 2000 on Governance and 2003 on HIV.

The ZHDR 2017 has a special focus on issues of climate change, hence its theme is *Climate Change and Human Development: Towards Building a Climate Resilient Nation*. This is because the Government of Zimbabwe regards climate change as a challenge which has the potential to undermine many of the positive achievements made in meeting the country's development goals. The ZHDR 2017 seeks to provide an in-depth analysis of challenges relating to climate change and human development in order to mainstream climate change into national planning and build the resilience of vulnerable people in the country to climate change using a human development lens.

The production process of ZHDR 2017 was inclusive and participatory and was led by a Task Force chaired by the Office of the President and Cabinet, which was broad based and encompassed a wide range of experts in the areas of climate change/environment and human development and related matters. This was to ensure participation and collective ownership as well as the quality of the report. In addition, the compilation of the ZHDR 2017 involved convening consultative workshops that had representation from all ten provinces of Zimbabwe, with participants representing most interest groups to ensure that the views of as many constituencies as possible were taken into consideration so that the ZHDR is national in character. The views of young people (15 to 35 years) were also solicited through a UNICEF Zimbabwe U-Report Poll.

The ZHDR 2017 uses the 'Drivers, Pressures, State, Impacts, Responses' framework to analyse the interactions between climate change and human development. The framework is modified to provide for analyses of the state and trends of the livelihoods, food security, health and education aspects of human development, the impacts of climate change on them, and the responses by society, policy makers, the private sector and development partners to these impacts. It also assesses progress towards meeting internationally agreed goals and identifies gaps in their attainment. The concepts of sustainable development, human wellbeing and climate change are core to the analysis.

The production of the ZHDR 2017 is an important development as the previous ZHDR was produced in 2003. The Report is designed to advocate for a widened national response to climate change that includes multisectoral development interventions. These interventions should complement and strengthen the current, largely environmental, responses to climate change, as it is not just an environmental issue, but a threat to Zimbabwe's broader development effort.

Climate change can have adverse impacts on the lives and wellbeing of Zimbabweans and can constrain or even reverse the progress in social and human development that Zimbabwe has previously accomplished. The impacts of climate change and variability are becoming more evident with increased incidence of droughts, floods and hailstorms, as well as more hot days and heatwaves. These elements pose serious problems with far reaching social, economic, political and environmental consequences. In Zimbabwe, climate change is likely to stall the country's development, and pose a serious risk to food security and the adaptive capacity of the Zimbabwean population, especially those in vulnerable communities. There is a need to integrate climate change issues into the development planning process at all levels, including national, district and local levels, to ensure coordinated programming and activities.

Human development is an approach that is focussed on people's opportunities and wellbeing;

it is about expanding the richness of human life, rather than just the wealth of the economy in which human beings live. Apart from the purposes of comparability, the Human Development indices assist nation states in policy formulation, development planning and mitigation, which often require national as well as regional or international collaboration. The selected indices are generally non-parametric or distribution free, and hence amenable to intra-country and inter-country comparisons.

The Human Development Index (HDI) is a ‘pooled’ index from the dimensions relating to health, education and general incomes. Theoretically a higher HDI points to a higher level of socio-economic development. Zimbabwe’s HDI of 0.522 improved by 18 percent during the period 2000 to 2015. This is explained by increased life expectancy (to 60.7 years), an increase in the expected years of schooling (to 10.3 years) and mean years of schooling (to 7.7 years), decreases in human immunodeficiency virus (HIV) and acquired immune deficiency syndrome (AIDS) related mortality. Nevertheless, it was accompanied by fiscal economic downturn, with incomes falling by 33 percent. As expected, urban centres registered higher HDIs than rural areas.

The Inequality-adjusted Human Development Index (IHDI), which takes account of inequality in the three dimensions of health, education and incomes, falls below the HDI as inequality increases. In Zimbabwe, a general reduction of income disparities and provision of equal opportunities in the education sector and workplace would be required to improve the country’s IHDI. For Zimbabwe, the difference between the IHDI and the HDI is relatively smaller than that of seven other Southern African Development Community (SADC) Member States. Thus, the disparities in the development dimensions are manageable, but could be improved.

The Gender Development Index (GDI) accounts for human development impacts of gender gaps in the computation of HDI. The GDI is not an independent measure as it merely adjusts for gender related inequalities in the HDI dimensions. Zimbabwe’s GDI of 0.925 is close to unity, which implies that the HDIs for females and males are nearly equal. Zimbabwe should be complemented for accelerating both male and female educational streams, and expanding health facilities countrywide. It is expected that the Science, Technology, Engineering and Mathematics (STEM) initiative, coupled with other ‘equal opportunity’ educational reforms, will spur the country into even higher GDIs.

The Gender Inequality Index (GII) is a refinement of the GDI which considers gender related factors such as maternal mortality, adolescent birth rates, education, political empowerment and labour market participation. A low GII points to a high progression of females across the developmental levels. Although Zimbabwe’s GII (0.540) is comparable with that of other countries in the SADC region, there is room for improvement. Maternal mortality is persistently high, as are adolescent birth rates. Government is urged to improve the conditions of maternal care and to discourage early marriage. In addition, policy makers are urged to upscale women’s self-determination and career opportunities, as Zimbabwe was ranked 126/189 on the empowerment scale.

The Multidimensional Poverty Index (MPI) is a measure of acute poverty which captures severe deprivations of individuals in health, education and incomes. Poverty renders populations less capable of coping and adapting to the stresses of climate change. In Zimbabwe, urban MPIs are relatively lower than those in rural areas. Several provinces in Zimbabwe have been classified as being in ‘severe poverty’, with some in the ‘destitute’ category. Living standards contribute 55 percent to the level of deprivation, hence the need for policy makers to target resources accordingly that is to raise living standards by improving the availability of clean household fuel, decent sanitation, clean drinking water, household electrification and opportunities for asset acquisition.

The Environmental Performance Index (EPI) ranks countries, according to their environmental performance, relating to the protection of both humans and the environment. With a score of 49.55 percent, Zimbabwe is mid-way and ranks second to South Africa within the SADC region. Ar-

measures for improvement include policies that encourage renewable energy adoption, abolition of squatter settlements, reduction of wild forest fires and river/dam pollution, and introduction of air quality monitoring at mining/industrial sites.

Zimbabwe is experiencing hotter and fewer cold days as a result of climate change and variability. The period since 1980 has been the warmest since Zimbabwe started recording its temperature in 1901. However, the maximum temperatures vary between locations, with temperatures being higher in the lowveldt and lower in the highveldt areas but generally showing an increase at all altitudes since 1980. Mean annual minimum temperatures have hovered around 14°C between 1980 and 2016 with a drop to 8°C between 2004 and 2008.

There has been an overall decline of nearly 5 percent in rainfall across Zimbabwe during the past century, with temporal and spatial rainfall variation in mean rainfall received. The largest recent rainfall deficit was for the 2015/16 season, which almost matched the 1991/92 drought at an average seasonal rainfall around 400mm. This had impacts on food security and nutrition, and provision of water, sanitation and hygiene. About 2.8 million people were deemed food insecure, during this drought, with negative impacts upon human development.

Rainfall distribution information is important as it can be used to determine, for example, the crops to grow and livelihoods to undertake in different regions of the country. In Zimbabwe rainfall distribution is erratic both in space and time across all the provinces. It is against such a climatic background that the ZHDR 2017 human development aspects – livelihood, food security, health and education – were assessed.

The timing and volume of rainfall received in Zimbabwe are becoming increasingly uncertain and affect the farming calendar. Stakeholders at the ZHDR consultative workshops indicated that rains were coming late (in some places towards the end of December), markedly reducing the length of the cropping season.

Drought is one of the most frequently occurring natural disasters in Zimbabwe, and given Zimbabwe's heavy reliance on rain-fed agriculture and livestock, this has serious implications for rural livelihoods and the country's food security. Results of hazard mapping show that drought is a recurrent feature of climate change that occurs in virtually all climate zones of Zimbabwe, from wet to dry, but is more severe in the western and southern parts of the country. The same areas also experience more frequent mid-season dry spells that affect crops, especially maize, the main staple cereal in Zimbabwe, making the country's communities food insecure.

Drought also has impacts upon water availability for domestic and industrial use and power generation, affecting cities and non-agricultural sectors. Hence adaptation to drought is crucial for coping with the wide ranging impacts of climate change. Actions need to be taken to improve access to water, and efficient management of its use as these are the foundations for building climate resilient livelihoods. Efforts are also needed to rehabilitate and improve water related infrastructure, including through promotion, resuscitation and rehabilitation of irrigation schemes

Recent meteorological data indicate an increase in the frequency of violent storms sometimes with hail and strong winds that damage infrastructure, property, crops and cause loss of human and livestock lives. Floods tend to occur in the low lying northern and southern areas of Zimbabwe, often as a result of the fact that cyclones tend to pass through these parts of the country.

Climate models predict that Zimbabwe's climate will become warmer than the 1961 to 1990 baseline, with warming rates of 0.5 to 2°C by 2030. These projections indicate a drying trend that will increase in intensity with time. As such Zimbabwe will become both a hotter and drier country under climate change. The foregoing demonstrates that climate is changing and it is necessary for the coun-

try to build resilience in all its sectors.

The Climate Change Vulnerability Index (CCVI) is a recent index that enables countries to calculate their vulnerability to the impacts of climate change over the next 30 years, with the classes of risk ranging from low to extreme risk. The countries with the highest risk are characterised by high levels of poverty, dense populations, exposure to climate related events, and their reliance on flood and drought prone agricultural land. Zimbabwe was ranked 9 among 16 countries with the 'extreme risk' rating in a global ranking of 170 countries.

The impacts of climate change on Zimbabwe's economy, which is primarily agro-based, with over 70 percent of the population living in rural areas and dependant on climate sensitive livelihoods such as arable farming and livestock, is large. These challenges create barriers to people, and inhibit them from engaging fully in decent work, resulting in huge untapped human potential. The impacts are much more pronounced among young people, women, people with disabilities and others who may be marginalised.

Climate change effects are expected to intensify in the years ahead. The increased incidence of drought and the resulting heightened water stress are already having adverse effects on crop and livestock productivity, causing deepening land degradation and threatening the very existence of wildlife and biodiversity. Over a million people in Zimbabwe are vulnerable to adverse climatic shocks and are food insecure as climate change is affecting the agricultural sector, ground water systems and surface water, environment, tourism and other economic sectors.

Climate change affects human development through changes in temperature and precipitation, resulting in extreme events. These bring about disasters through destruction of crops and damage to infrastructure, disruption of livelihoods, food security, health and education, and threats human and livestock lives. The Meteorological Services Department is mandated to provide up-to-date information on climate issues and information to determine the interventions required to react to the adverse impacts of climate change, while the Department of Civil Protection is responsible for disaster preparedness and response. However, both institutions have limited capacity (material, financial and human) to effectively carry out their mandates and it is necessary to capacitate both so that Zimbabwe has adequate disaster preparedness, early warning systems, and disaster risk management to deal with the increasing frequency of extreme events and disasters caused by climate change. Responses to floods and other weather related hazards require the creation of multiple hazard warning and response systems, embedded at community, ward and district levels and in Civil Protection Unit structures, which can translate early warning meteorological and hydrological information into integrated mitigation and adaptation actions.

Improvement of water use efficiency is one form of adaptation that has minimal costs. Water, Sanitation and Hygiene (WASH) interventions need to be strengthened through a focus on water recharge, retention and efficient use, including investment in rehabilitation of dams and weirs, water harvesting, drip irrigation and solar powered water schemes for irrigation, as well as demand management of institutional and domestic consumption. There is also a need to drill more boreholes as these normally provide safe water. Dam rehabilitation and training of communities, especially youth, on catchment management are key to reducing siltation of dams and improving irrigation facilities. Furthermore, it is important to look at water resources infrastructure and to design dams, bridges and levees that accommodate droughts, flooding and extreme events. Investment in piped water schemes for domestic use lessen women's burden in fetching water and enable them to use their time in more productive activities. Public-private partnerships are required for the design of cost effective and context specific rain harvesting techniques and infrastructure, and for scaling up borehole drilling programmes in rural and urban areas. It is also recommended that Government equip the District Development Fund with appropriate and adequate machinery and equipment to undertake borehole drilling and dam scoping exercises.

Appropriate agro-ecology and climate resilient agricultural practices, such as conservation agriculture, ensure improved production which does not undermine the environmental base and have the potential to improve in-situ water conservation. Agricultural productivity could be enhanced via knowledge and skills transfer through extension services and investment in agricultural infrastructure across the country. Land crop suitability mapping needs to be carried out for the country to ascertain whether there have been changes in land suitability across the country arising from climate change. Therefore, it is necessary to continue building and investing in climate smart technologies as well as in rain-fed and irrigation agriculture. Additional efforts should be made to address the bottlenecks faced by communities in adopting climate smart agriculture.

Marginalisation of locally adapted crop varieties leads to reduced social and ecological resilience. Efforts have been made to promote small grains that are more drought resistant in response to frequent droughts. However, uptake has been low because of the processing requirements of small grains. Women at the national ZHDR consultations complained that small grains require a lot of labour, especially in dehusking and processing, hence they did not favour small grains as an alternative diet to maize. Promotion of small grains should be continued, but supplemented by the promotion of technologies that reduce the labour requirements in their processing. Extensive research has been done on harnessing biofortified drought tolerant crops such as beans and sweet potatoes. Efforts to convince farmers to adopt local varieties of crops should be continued and strengthened with public awareness being pursued through all forms of media.

Planning destocking and encouraging rearing of indigenous breeds are some of the adaptive interventions for livestock production systems. Livestock, particularly indigenous cattle that are heat tolerant, are an important asset in the farming system and can do well in a dry climate. In this case, promoting livestock as a substitute or in addition to crop production in dry areas is an important safety net in the face of the changing climate in the country. It is important to improve livestock survival by encouraging and increasing the use of feedlots to carry livestock through the drought periods. The production and processing of fodder crops to increase livestock feed availability should be supported to improve the survival of livestock. Promotion of rapid destocking in anticipation of drought, is an appropriate adaptive measure but this entails there being functional markets that cater for this destocking process. Livestock improvement programmes instituted by government departments and private companies are vital for sustaining farming households through changing conditions.

Poor harvests caused by drought lead to malnutrition, hunger, sickness and inability to concentrate, which reduce performance and diminish learning achievement among children. Lack of food and increased incidence of weather related diseases tend to increase absenteeism and, in the worst case, cause children to drop out of school altogether. School based health and nutrition programmes improve the nutritional intake of children which improves their health, reduces morbidity, increases school attendance and improves concentration and learning performance and outcomes among school children. Therefore, it is recommended that such programmes be introduced in all schools.

Heavy rainfall, hailstorms and floods are becoming more frequent because of climate change. Flash floods occurring particularly in urban areas are caused mainly by blocked or poor drainage systems. Wetlands have an important role in providing a buffer against flood water. In addition, 'climate proofing' of infrastructure is desirable in order to minimise the risks and associated costs of weather related damage. It is recommended that local authorities ensure drains are thoroughly cleaned before the rainy season begins. With regard to wetlands, local authorities should enforce existing regulations and not allow development of infrastructure on these areas. Furthermore, there is a need for strict adherence to building standards, particularly in urban areas, as part of structural measures for protection against floods. A strategy for 'climate proofing' of infrastructure should be developed together with implementation modalities. This should facilitate the gradual conversion of all infrastructure to become as 'climate resilient' as possible.

It is necessary to improve the disaster preparedness capacity of the education sector so that it responds to the situation of internally displaced children by minimising disruption to their learning. The concepts of 'portable schools' and schools in 'buffer zones' capable of accommodating expanded numbers of students at short notice are worth exploring. It is recommended that a task force be put in place or a study be conducted to explore possible models that could be adopted to minimise disruption of education among children living in areas prone to weather related disasters. Related to this, the education sector's capacity to deliver schooling services in temporary shelters/camps set up for climate induced displaced populations, needs to be strengthened.

There are a number of safety nets that should be in place to combat climate change. These include: diversifying livelihood systems in communities to reduce the risk of dependence on and failure of one enterprise; improving financial instruments in order to help households to adapt to climate change; building comprehensive social protection systems; building communal granaries as a possible solution for dealing with erratic food supply; providing education assistance to orphans, the poor and other vulnerable children; and creating an insurance system that is based on a fair compensation system for farmers who are affected by climate related and environmental challenges. Empirical evidence shows that communities with a range of livelihood options and improved and diversified production are more resilient to climate related shocks than those that depend on one or two options. It is recommended that financial and non-financial channels for remittances be made simpler as remittances help people to manage shocks and escape from climate induced poverty. Social insurance and safety nets are efficient tools to support poor people when they are affected by natural disasters. This prevents communities from selling productive assets and enables them to bounce back from climate related shocks and stresses. There is a need for research on how the communal granary concept could work in a modern, individualistic world. More efforts should be made to mobilise resources for the expansion of the Basic Education Assistance Module to support the education of orphans and other vulnerable groups. Zimbabwe should introduce a Weather-based Index Insurance as a matter of urgency.

Improved governance structures that are gender sensitive, strengthened formal and informal institutions, strengthened disease surveillance systems, and development of a Public Health Adaptation to Climate Change Plan are some of the strategies that could be used to address climate change challenges. It is recommended that Government, development partners and the private sector build a centralised database and an open source repository of all initiatives and social, economic and climate data that is easily accessible, to allow for evidence based programming or interventions. It is necessary to identify constraints to female participation in value chain growth and to find opportunities for women's entrance into decision making platforms, as this will enhance women's livelihood options and incomes. Interventions that build the capacity of all institutions at all levels in disaster risk management, and the development of resilience plans that strengthen community level resilience to extreme climate related events should be implemented in Zimbabwe. Disease surveillance systems need to be strengthened in the face of the expectation of increased disease outbreaks resulting from climate change. It is recommended that Zimbabwe develop a National Health Adaptation to Climate Change Plan/Strategy.

Universities and agricultural institutions play an important role in meeting the demand for climate change research, education and training. Education is a powerful vehicle for imparting new ideas to young people and it can be used to carry climate messages. Adaptation responses should include scientific and indigenous technical systems to anticipate climate related patterns and design adaptive measures. Formal and informal dialogue platforms are needed to encourage young people and women to participate. It is recommended that financial support be provided for research in areas that inform adaptive strategies to produce knowledge products on which climate resilience and food security can be anchored. Areas for further study to understand and predict the impacts of climate change on health should be identified systematically and research commissioned. Further studies related to water management and climate change should be undertaken. In-service training for teachers

already in the system, public sector extension officers, agro-service providers and personnel of civil society organisations (CSOs) should be undertaken to strengthen their knowledge climate change. This would enhance their ability to implement action plans for climate change adaptation with communities. The communication strategy for raising awareness on climate change should be implemented. At least, a National Day should be set aside for climate change and indigenous knowledge appreciation and for sharing of ideas, and a programme could be established to encourage the co-production of modern and traditional scientific knowledge in building climate resilient measures to help individuals and communities to adapt to the impacts of climate change. The creation of Information and communications technology (ICT) platforms for spreading weather and climate forecasts, especially to rural farmers to advice their farming activities, should be a priority.



GOVERNMENT OF ZIMBABWE



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