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Context

Climate context

Zimbabwe has 390,000km^2 of land area, with 45 per cent of this under forest cover. Emissions from Zimbabwe's industry are limited, and the potential sequestration capacity of its forests are high.

Zimbabwe has four seasons: cool season from mid-May to August, hot season from September to mid-November, main rainy season from mid-November to mid-March, and post-rainy season from mid-March to mid-May. Mean monthly temperature varies from 15C in July to 24C in November. Mean annual temperature varies from 18C on the highveld to 23C on the lowveld. Average rainfall ranges from 450mm to 1050mm per year. Some 12% of Zimbabwe is protected in national parks and wildlife estates (Zimbabwe Ministry of Environment Water and Climate 2015).

Zimbabwe is subject to perennial floods and droughts, and in addition faces environmental challenges including pollution, poor waste management, deforestation and land degradation, and veldt fires. Rainfall is a critical component in defining seasons in its subtropical climate, and small changes in rainfall can affect ecosystems and key economic sectors. Modest downward trends in summer rainfall have been observed and intraseasonal rainfall characteristics such as onset, duration, dry spell frequencies, and rainfall intensity have worsened. The incidence of hot days, hot nights, and hottest days has increased with a decrease in extreme cold days and cold nights in recent decades.

Socioeconomic context

Zimbabwe has been independent from British colonial rule since 1979. The most recent parliamentary and presidential elections were held in 2013, and the next are due in 2018. The Constitution states that the legal system is a combination of the Roman Dutch Law and African Customary Law as modified by legislation. The bicameral parliament consists of the 80-seat Senate and the 270-seat House of Assembly. The 2012 census estimated Zimbabwe's population at 13.1 million, with 70 % living in rural areas.

GHG emissions per capita are 4.03tn CO_2eq. Total national emissions are 0.062% of the global total. Emissions are generated by the following sectors: energy (49%); agriculture (40%); waste (6%); and industry (5%). The country generates about 1,200MW of electricity – about 40% from thermal plants and 60 per cent from hydro plants. There is potential for further renewable energy production – notably hydro power and solar. Firewood, candles, and paraffin currently provide the majority of rural energy needs. Water shortages have resulted in reduced electricity generation from hydro plants. In 2014, the mini-hydro plants were only generating around 50% of their maximum ratings, while as at August 2015 Kariba Power Station was operating at 63% to reduced water allocation (The Republic of Zimbabwe 2013).

Zimbabwe generates 1200MW of electricity from thermal and hydropower. Rural energy needs are met by firewood, candles, and paraffin. Energy demand is growing by 2% annually. Local supply does falls short of demand, so energy is imported from Zambia, Mozambique, and South Africa. Zimbabwe has been initiating new hydropower, solar, and bioenergy projects (Zimbabwe Ministry of Environment Water and Climate 2015).

The most important primary economic sectors are agriculture and mining. Manufacturing is the largest sector in terms of value added, and ecotourism is growing (Zimbabwe Ministry of Mines Environment and Tourism 1998). Zimbabwe's major mineral reserve deposits are in asbestos, gold, copper, chrome, nickel, diamonds, platinum, coal, and iron. Small-scale mining has increased, contributing to employment creation and poverty reduction, although methods used can cause serious environmental damage (Zimbabwe Ministry of Environment Water and Climate 2015).

Constituting 10-15% of GDP, agriculture is largely rain-fed and thus sensitive to climate change. About 80% of the rural population's livelihoods are dependent on rain-fed agriculture. The sector also provides 60% of raw materials required by the manufacturing industry and 40% of total earnings. Thus climate change adaptation in agriculture is a national priority, demanding policy direction at the highest level. Agriculture also provides opportunities for climate change mitigation, through initiatives including Climate Smart Agriculture (CSA), and sustainable agroforestry adaptation and management practices – thus lending the sector the

potential for GHG emission reduction while also improving national food security and economic productivity. The sector is vulnerable to water stress, flooding, frost, and hail. Yields of maize – the country's staple food – may decrease by over 30% by 2030, with the area suitable for maize production projected to decrease further by 2080.

Intended Nationally Determined Contribution

The Ministry of Mines, Environment, and Tourism submitted Zimbabwe's Intended Nationally Determined Contribution (INDC) in 2015 (The Republic of Zimbabwe 2013). As of March 2017, it has not yet been converted to a Nationally Determined Contribution (NDC).

Zimbabwe's economy is largely dependent on sectors vulnerable to climatic change, notably: agriculture, forestry, energy, tourism, and industry. Thus, the INDC focus is on adaptation and poverty reduction. Strategically beneficial mitigation actions, which present an opportunity to reduce GHG emissions while enhancing socio-economic growth and improving livelihoods, will be considered, particularly when such action is supported by finance, capacity-building, and technology development and transfer. The mitigation contribution for Zimbabwe is expected to yield emissions 33% below BAU energy emissions per capita by 2030. Zimbabwe requires US$55.8 billion to reduce GHG emissions by 33%, toward its INDCs to the UNFCCC (Zimbabwe Ministry of Environment Water and Climate 2015).

Accounting for this contribution will be carried out using the IPCC and other approved methodologies and the population, energy balance and energy intensities will be updated periodically. A range of mitigation actions is planned, including alternative energy generation, alternative fuel sources, and energy efficiency. Zimbabwe also intends to leverage its resources, including carbon credits, or sell off emission reduction units through international and regional carbon markets or pricing mechanisms.

Adaptation visions, goals, and targets include the following:

- Promoting adapted crop and livestock development and climate smart agricultural practices;
- Building resilience in managing climate related disaster risks, such as droughts;
- Strengthening management of water resources and irrigation in the face of climate change;
- Promoting practices that reduce the risk of crop loss, livestock and agricultural incomes;

Crosscutting options include:

- Human capacity building;
- Mainstreaming gender and support of vulnerable groups;
- Promoting non-timber forest products and sustainable agroforestry;
- Improving management of hydro power stations;
- Increasing water-holding capacity of reservoirs; and
- Supporting diversification of livelihoods from agriculture.

The INDC National Steering Committee will continue working closely with the Ministry of Environment, Water and Climate's Climate Change Management Department in facilitating the accounting and monitoring of the INDC.

Policy and planning documents

National Communications to the UNFCCC

Zimbabwe's Government signed and ratified the UNFCCC in 1992. The Ministry of Mines, Environment, and Tourism submitted Zimbabwe's Initial National Communication (INC) in 1998. The INC lists potential options to address climate change (Zimbabwe Ministry of Mines Environment and Tourism 1998):

- Mitigation
    - Introduce more efficient coal-fired industrial boilers;
    - Increase the use of hydro electricity;
    - Introduce afforestation for carbon sequestration;
    - Introduce minimum tillage in agriculture;
    - Introduce biogas digesters in rural households; and
    - Photovoltaic panels for lighting in rural areas.
- Adaptation
    - Change land use practices
    - Protect areas under stress
    - Introducing new species;
    - Improve forest management; and
    - Infrastructure investment and research and development at the national level

The Ministry of Environment and Natural Resources Management submitted Zimbabwe's Second National Communication (SNC) in 2012 (Zimbabwe Ministry of Environment and Natural Resources Management 2012). The SNC identified the energy sector as the major GHG contributor.

The Ministry of Environment, Water, and Climate submitted Zimbabwe's Third National Communication (TNC) in 2015 (Zimbabwe Ministry of Environment Water and Climate 2015). The TNC analysed five emissions sectors, identifying mitigation options for each:

- Energy
    - Improved maintenance of equipment and infrastructure
    - Technology change and fuel substitution
    - Replacing three old small thermal power plants with one additional hydropower plant
- Industrial processes, solvents, and other product use
- Agriculture
    - Reducing CH_4 emissions from non-dairy cattle
    - Reducing N_2O emissions from agricultural soils
    - Reducing CO_2 emissions from burning of savannahs
    - Restoration of grazing infrastructure such as fencing of rangelands in resettlement areas
- Land use, land use change, and forestry
    - National and international collaboration on knowledge exchange and experience in implementation of forestry related policies
- Waste
    - Waste prevention, reduction, or minimisation
    - Reuse and recycling of solid waste

Zimbabwe has significant sensitivity to climate change, through its dependence on rain-fed agriculture. Climate change expectations across Zimbabwe are characterised by high temperature and rainfall variability and extremes. Start of season dates for the five representative meteorological stations in each of the Agro-Ecological Zones tend to shift later. Rainfall is expected to decrease most in the southern parts of the country. Cropping systems and livestock are vulnerable to climate change, in the southern and western parts of the country, with this vulnerability exacerbated by climate change. The TNC therefore used the Chiredzi region in the south of the country as an example to identify adaptation options, as detailed below:

- Agriculture
    - Selling livestock, vegetable gardening, staggered planting, dry planting, food hand-outs from donors, consumption of non-timber forest products
    - Supplementary feeding of livestock from surrounding establishments (e.g. sugar farms) when pastures are in poor state

- Health
    - Interventions to reduce malaria, bilharzia, and diarrhoea should target water and sanitation issues
- Future vulnerability
    - Climate projections indicate an increase in areas suitable for small grains, and an increase in malaria-risk areas. Agricultural research has focused on improving small grain traits and breeding of very short season maize varieties, and there's a strong call to improve indigenous seeds. Non-collaboration, non-existent linkages among institutions, and lack of coordinated climate research funding has lead to siloed research.

National Climate Change Response Strategy (NCCRS)

The NCCRS mainstreams climate change through a sectorial approach, to allow each sector to direct its project proposals to the appropriate funding mechanism. It recommends a range of strategies specific to the following sectors:

- Natural systems (air pollution; water sector; land use, land use change, and forestry; biodiversity and ecosystems);
- Economic sectors (agriculture and food security; industry and commerce; mining; tourism);
- Physical and social infrastructure (energy; transport; disaster risk management and social infrastructure for human settlements; waste management; health; gender, people living with HIV and AIDS and other vulnerable groups; children and youth).

It also recommends strategy enablers addressing:

- Capacity building (capacity building for climate change; the role of meteorological services in climate change; technology transfer);
- Climate change education, communication and public awareness (climate change education and training; public awareness-raising and communication).

Finally, it recommends measures to address climate change governance and institutional framework, and the climate change policy and legal framework. The estimated costs of actions recommended by the NCCRS amount to US$9.9 billion. The most significant parts of this consist of: water resources at US$3.2 billion; biodiversity at US$2.4 billion; and transport at US$1,1 billion. These actions are to be implemented over 10 year, with a review after every 5 years. Performance matrices from the NCCRS will be used to monitor and report on adaptation progress (Zimbabwe Ministry of Environment Water and Climate 2014).

Zimbabwe Agriculture Investment Plan (ZAIP)

The ZAIP, spanning 2013 to 2018, indicates that the sector requires at least US$2 billion per year to fully achieve its production potential, while it is currently relying on a US$0.5 billion allocation from the National Treasury. A cumulative amount of up to US$35 billion (US$8.8 billion through national Government, and US$26.2 billion through international support) will be needed by 2030 under business-as-usual (BAU) to adapt the sector to climate change. Zimbabwe aims to achieve this through joint efforts between the Government, private sector, development partners, and UNFCC-related technology and funding mechanisms. The ZAIP will be considered in monitoring and reporting on adaptation progress.

Baseline report

The Ministry of Economic Planning and Investment Promotion published Zimbabwe's baseline report on economic development and climate change in 2012. It prioritises the following actions:

- Develop a National Climate Change Strategy
- Develop a National Adaptation Programme of Action
- Seize opportunities for mitigation research and technical assistance (e.g. UN-REDD+)
- Access international climate finance opportunities
- Complete the Second Communication on Climate Change by the Climate Change Office, and provide the Office with recurrent funding to fulfil its mandate, expand, and decentralise to provincial levels
- Clarify roles and improve coordination between government agencies, NGOs, researchers, and international agencies

The Baseline Report lists the following key areas for improvement (Zimbabwe Ministry of Economic Planning and Investment Promotion 2012):

- Agriculture
  - Budgetary support;
  - Increased collaboration in the collection, analysis, and dissemination of weather information;
  - Improved seed varieties;
  - Expanded irrigation development;
  - Reclassification of Zimbabwe's agro-ecological regions; and
  - Linking agricultural policy to climate change.
- Forestry
  - Establish an inter-sectoral platform to guide forestry policy; and
  - Assess, quantify, and monitor existing carbon stocks in forests (e.g. by becoming a partner in the UN-REDD programme).
- Land use
  - Establish a coordinated system to track land use changes, emphasising both the clearing of forests and afforestation initiatives at farm level; and
  - Balance crop-based and forest-based land uses in policy guidelines.
- Water
  - Improve Zimbabwe's Water Policy, by including mitigation and adaptation strategies (e.g. improving irrigation systems, more research on groundwater resources, and investing in hydropower schemes); and
  - Revise the Water Act and Zimbabwe National Water Authority Act (both created in 1998).
- Mining
  - Government should provide a regulatory framework encouraging the mining sector to use clean and energy-efficient technologies, particularly in coal mining;
  - Fund research and capacity-building activities for technical colleges and universities, to build the critical skills required to: develop efficient technologies, monitor and assess greenhouse gas emissions, enforce government regulations, and foster a transition to low-carbon mining; and
  - A proportion of funds contributed by mining firms to community trust funds should be used to support community-wide adaptation activities.
- Energy
  - Embed climate compatible energy policy and programmes in Zimbabwe.
- Transport
  - Detailed research into the sector's contribution to GHG emissions; and
  - Realising opportunities for mitigation and adaptation (e.g. promoting biofuels and other alternative fuels, promoting fuel-efficient transmission technologies, and developing an efficient public transport system).
- Disaster risk management
  - Drafting of the Disaster Preparedness and Management Policy;
  - Access technical assistance from regional and international disaster reduction agencies to support education and training, including public awareness programmes (e.g. mainstreaming disaster risk management training and capacity building in schools, colleges, universities, and other training institutions);
  - Establish an effective disaster database.
- Urban infrastructure
  - Support well-funded research to analyse the potential impacts of climate change on urban infrastructure (including institutional preparedness, policy adequacy, and performance management);
  - Use research to guide development of guidelines and policies to ensure urban infrastructure can survive extreme weather events.

Nationally Appropriate Mitigation Actions (NAMAs)

Zimbabwe has four NAMAs seeking support for preparation:

- National solar water heating programme (NS-240)
- Provision of sustainable energy in Zimbabwe through use of biogas (NS-241)
- Lighting system optimisation by replacing incandescent and other lights with energy efficient LED lights (NS-243)

- Efficient biomass stove development, dissemination, and commercialisation (NS-244)

Additional documents

- Transport Policy
- Industrial Development Policy
- The Drought Mitigation Strategy will provide guidance for monitoring progress toward alleviating impacts from droughts.
- The Disaster Risk Management Bill will be considered in monitoring and reporting on adaptation progress.
- The National Adaptation Plan process will advance the assessment of the Zimbabwe's vulnerability adaptation needs, and costs.
- In 2015, the Research Advocacy Unit produced a user-friendly guide entitled Climate Change in Zimbabwe: Facts for Planner and Decision Makers, with support from the Konrad Adenauer Foundation.
- Zimbabwe is in the process of producing a National Climate Policy, as well as a National Adaptation Plan (Zimbabwe Ministry of Environment Water and Climate 2015).

Relevant legislation includes (Nachmany et al. 2015):

- Legislative
    - Energy Regulatory Authority Act, Act No.3 of 2011 (Chapter 13:23)
    - Environmental Management Act (EMA), Act No.13 of 2002 (Chapter 20:27), revisions under Act No.5 (s.23) and Act No.6 of 2005 (s.28)
    - Electricity Act, Act No.4 of 2002 (Chapter 13:19), revision under Act No.3 of 2003
- Executive
    - National Energy Policy (2012)
    - Medium Term Plan (2011)

Documentation to be concluded in the near future includes the National Climate Policy Disaster Risk Management Policy, Renewable Energy Policy, Biofuels Policy, Forestry Policy, Irrigation Master Plan, and Water Resources Management Master Plan. Zimbabwe is realigning Acts and sector policies with the Constitution of Zimbabwe, which was enacted in 2013, however this process may be delayed by lack of financial resources (Zimbabwe Ministry of Environment Water and Climate 2015)

Climate finance stakeholders

Ministry of Environment, Water and Climate

The Climate Change Management Department of the Ministry of Environment, Water, and Climate is the Nationally Designated Authority (NDA) to the GCF; the Department's Director, Mr Washington Zhakata is the Focal Point (FP) to the GCF. As Zimbabwe's UNFCCC FP, the Ministry is mandated to guide the country's compliance in all multilateral environmental agreements, including the INDC.

The Ministry spearheaded the development of the INDC, with the guidance of the Office of the President and Cabinet, and involvement of other relevant Ministries and key stakeholders to ensure implementation and alignment with sectoral plans and the broader national vision. The Ministry was also responsible for developing accounting, and the monitoring and evaluation framework for the intended contributions. The Government's Results Based Management system, which is coordinated by the Office of the President and Cabinet, will be assisted by the Ministry.

The Ministry of Environment, Water, and Climate is responsible for all environmental issues, including climate change coordination through the Climate Change Management Department (CCMD). The CCMD is responsible for National Communications to the UNFCCC, and is supported by a multisectoral National Climate Change Committee (NCCC). The Office of the President and Cabinet has overall responsibility of National Climate Policy decisions (Zimbabwe Ministry of Environment Water and Climate 2015).

Civil Protection Unit

This is a national Government Unit that coordinates climate-related disaster risk reduction programmes, and includes key agencies for disaster early warning, response and recovery. Seasonal forecasts on crop yields and rangeland conditions are coordinated under the drought mitigation strategy framework. An estimated US$900 million has been utilised in adaptation actions in the past five years.

Climate monitoring

The Meteorological Services Department (MSD) is a public institution in the Ministry of Environment, Water, and Climate with a mandate including monitoring the state and evolution of the atmosphere, and disseminating forecasts and warning on imminent meteorological hazards. Old equipment hampers data availability. The Zimbabwe National Water Authority (ZINWA) carries out hydrological monitoring. The Water Resources System is the main system used for data management (Zimbabwe Ministry of Environment Water and Climate 2015).

Other institutions

- The Ministry of Agriculture, Mechanisation, and Irrigation Development will produce crop yield assessments to contribute to reporting requirements on adaptation programmes.
- The Zimbabwe Vulnerability Assessment Committee (ZIMVAC) facilitated the Zimbabwe Vulnerability Assessments, to advance the assessment of the country's vulnerabilities. Cabinet will continue to produce ZIMVAC reports up to 2030.
- Zimbabwe's Cabinet will produce internal food and nutrition security reports under the National Early Warning Unit, as well as ZimVAC reports up to 2030.

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