



CLIMATE CHANGE AND LIVELIHOODS

Achieving human well-being through improved and sustained livelihoods is a major human development goal. Climate change and its associated stressors influence human development through their support or destabilization of livelihood systems, in particular, that of poor and vulnerable people.

LIVELIHOODS IN ZIMBABWE

The agriculture sector remains the most important source of income with half the country’s adult population in Zimbabwe dependent on it. Zimbabwe’s 24 livelihood zones show that most livelihood activities in the country are primarily centred on rain-fed agriculture (crop production, livestock and fisheries). They are highly susceptible to climate-related hazards and shocks, thereby, making rural household vulnerable to shifts and changes in the climate (Figure 1).

Poor people without reserves to face climate-related shocks and stresses may adopt forms of adverse coping strategies, which may support short-term survival but undermine overall wellbeing in the medium to long-term. Such adverse coping strategies can entail the liquidation of crucial productive assets; over exploitation of non-timber forest products; the reduction in food consumption in ways that have potentially irreversible welfare effects (eating smaller amounts and less nutritious food, especially for people living with HIV and

AIDS); and or the adoption of behaviour that undermines trust and social standing (theft, begging, commercial sex work, early marriages).

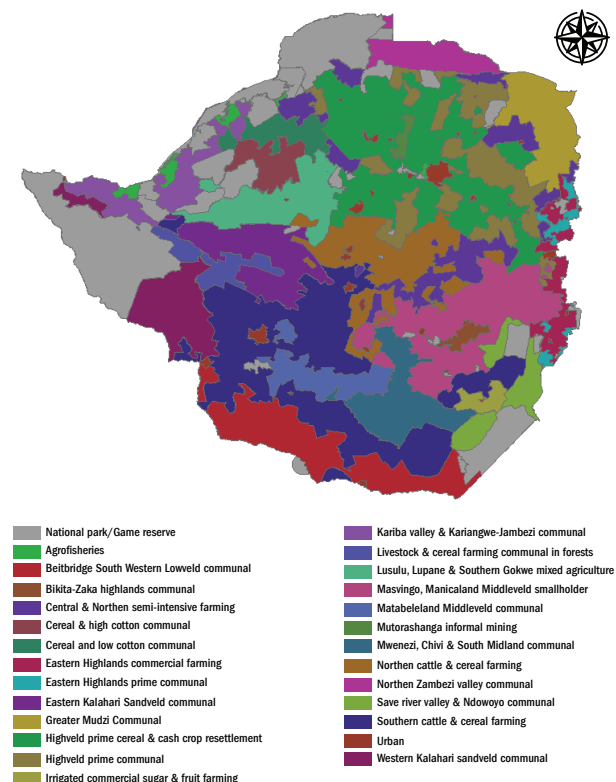


Figure 1 Zimbabwe’s national livelihood zone map - Source: ZIMVAC (2010)

Key to human development under a changing climate is ensuring that livelihoods are sustainable. However, the dominance of smallholder farmers (89 per cent) who rely on rain-fed production and with limited resources and assets makes agrarian livelihoods risky and human welfare vulnerable to shifting weather patterns.

Crop Production

Maize, one of Zimbabwe's main agricultural crops, is very sensitive to temperature and precipitation changes; hence production is seriously affected by weather-related stresses and shocks. National trends of the main cereal crops point to a fluctuating trend both in yields and production. These fluctuations are mostly driven by weather-related patterns and availability of inputs although structural issues and the poor macroeconomic environment also come into play.

The Intergovernmental Panel on Climate Change (IPCC) forecasts 20-50 per cent reduction in yields of staples in southern Africa. This outcome is already evident in Zimbabwe (Figure 2).

Studies show that agriculture in Zimbabwe is sensitive to climate change and significantly lower agricultural yields and reduce the plant crop growth period, particularly during the grain filling and ripening stages. On the other hand, floods result in the displacement and loss of land livelihood assets such as crops, livestock, machinery in the rural communities which consequently affects farming

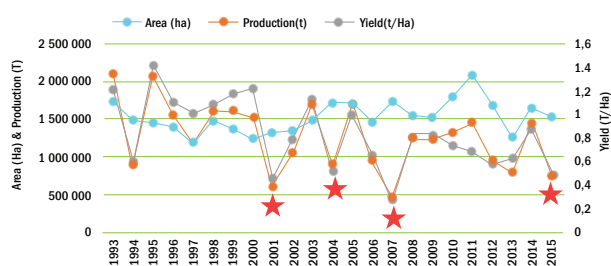


Figure 2 National trends for maize production 1993-2015 - Source: Ministry of Agriculture, Mechanization and Irrigation Development, Zimbabwe National Crop and Livestock Assessment reports and Zimbabwe National Budget Statements)

and livelihood activities. Floods also destroy crops at all stages of growth and impact negatively on agrarian livelihoods.

The indirect effects of floods include loss of human life and livestock, human health, access to natural capital such as forest products for food and income, and destruction of infrastructure such as roads, small dams and bridges. Those that grow perishable products (horticulture) are highly affected by destruction of roads and bridges after flooding episodes as they are unable to send products to markets in a timely manner.

Destruction of water reservoirs such as small dams makes communities vulnerable to future drought or long dry periods, particularly those that rely on these dams for low-end horticulture production. Moreover, floods result in temporary displacement of households and short-term loss of productivity and incomes.

Livestock production

Livestock, especially cattle are an important source of food, income, capital, draught power and safety net for individuals and households. The impacts of climate change are expected to heighten the vulnerability of livestock systems and reinforce existing factors that affect livestock production. In rural areas, ownership of livestock, especially that of cattle, is a key asset that measurably reduces household vulnerability to shocks and stresses associated with natural and human induced hazards. During a drought period when households lose livestock or the herd sizes become smaller they are plunged into transient and/or chronic poverty.

Drought and increased temperatures directly and indirectly affect livestock production in many ways. They reduce the availability of pasture from the climate change-ecosystem degradation interface (i.e through veldt fires, moisture deficiency that results in poor forage). In most communal lands cattle and small ruminants are grazed at high stocking rates and thus the numbers and productivity fluctuate

drastically when there is limited rainfall and reduction in forage. Primary productivity of forages and rangelands quality of plant material will be altered by increased temperatures which reduce the nutrient availability to animals.

Loss of livestock will likely occur from heat stress, water stress and malnutrition (through lower feed conversion rates). Research have found that cattle numbers in Zimbabwe increase during years with above-average rainfall whereas numbers decline dramatically in drought years. Experience shows that drought and extremely high temperatures, driven by El Niño phenomenon have devastating impacts on rural households especially those in Regions IV and V that rely on pastoralism as a livelihood.

Moreover, drought and increasing temperatures have an effect of lowering the reproduction/calving rates of livestock particularly cattle, and in decreasing the herd size in hotter areas. Studies point to a general shift toward smaller herd sizes, particularly of cattle in Zimbabwe, resulting from mortality and loaning out of cattle during drought periods. It has been shown that in the drought during 1982-84 household without stocks doubled and birth rates of livestock were heavily affected and decreased to zero at the peak of the drought. Heat-wave conditions associated with climate change have shown a 10 -14 per cent reduction in milk production in dairy cattle. Dairy cattle do not often recover even after conditions return to normal.

Increases in temperature, result in the spatial distribution and intensity of existing pests, and diseases which in turn affect livestock productivity or may cause death of livestock in some extreme instances. Usually smallholder farmers' animals are not fed protein supplements, dosed and vaccinated against diseases.

Floods and cyclones pose direct and indirect threats on livestock production in the country. They result in a direct loss of livestock and indirectly

affect livestock by destroying infrastructure such as dip tanks and paddocks. This in turn has the effect of increasing the susceptibility of livestock to malnutrition, pests and diseases. Flooding that occurs at an unexpected scale and with excessive frequency causes damage to life, livelihoods and the environment.

Moreover, cyclones and floods place pressure on households to dispose of their productive assets. The income realized from such livestock sales may not be enough to satisfy the food and domestic needs of a household especially when grain is obtained from the open market where it is sold at exorbitant prices.

Coping strategies for crop production and livestock livelihoods

Most stakeholders reported on asset stripping as a key strategy adopted by individuals and households in rural areas that are faced by climate-related hazards such as drought. Asset stripping involves the sale of assets such as livestock, houses, household utensils and farming equipment or barter trading for food. In many cases households resort to selling livestock but often the prices they realize from the sale is depended on the level of desperation of that household. This means that households or individuals often get prices below the market value for their livestock. For example, in the 2015/2016 El Nino induced droughts cattle prices plummeted from USD 400 to as low as USD 50 in Masvingo Province and USD 30 in Chiredzi, Mwenezi, Chivi and Bikita districts.

Effects on Fisheries

Fishing is integral to single and mixed livelihood strategies. Fisheries, especially the fishing of kapenta, serves as a vital safety net for people with limited livelihood alternatives and extreme vulnerability to changes in their environment. Fishing communities in Kariba, Binga and Mbire that depend on inland fisheries resources are likely to be particularly vulnerable to climate change.

Climate change and variability are compounding

other stressors such as over-exploitation, pollution, habitat degradation, and invasive species that affect fish productivity and threaten livelihoods of fisheries-dependent communities.

Impacts on Non-timber and Forest Products

Rural communities have adopted alternative livelihood activities such as firewood trade, sale of wild fruits to middlemen who resell them in the urban areas, honey production and caterpillar harvesting as income streams. However, these alternative livelihoods are dependent on rainfall distribution and quantity. For example, honey production is dependent on rainfall, such that inadequate or erratic rainfall has a negative effect on caterpillar and bee production.

Climate change affects seasonal livelihood opportunities especially those related to natural resource harvesting like mopane worms and thatch grass harvesting. The thatch grass is now limited because of declining grasslands. The availability of the seasonal mopane worm (caterpillars) and its gathering, preservation and selling are threatened by the frequency of dry spells and drought under a changing climate. Consequently, this limits food and income access opportunities for the families, particularly for those that are resource-poor.

Effects on Small-scale Mining

Gold panning or small-scale artisanal gold mining has emerged as an alternative or complementary livelihood to farming, especially among the unemployed youths. While gold panning has resulted in environmental degradation and has triggered land disputes, this livelihood source is also vulnerable to climate extremes such as heavy

rains and floods. These conditions make it difficult and unsafe to mine, and subsequently reduce the ability of people to make a living and supplement household incomes during the rainy season.

The Impacts on Urban Livelihoods

Urban livelihoods in Zimbabwe are directly and indirectly affected by climate change. Urban communities are inordinately dependent on reliable delivery of utilities such as water and electricity. When climate change puts these utilities provision under strain, urban dwellers are more helpless than their rural counterparts who at least can dig wells and fetch firewood for cooking. Moreover, reduced/disruptions to water supplies and electricity impact industrial productivity and viability; livelihoods depended on low-input market gardening especially among the urban poor; human health; and cause an overall decline in living standards.

Heavy rainfall and floods: Extreme events such as cyclones and their associated storm surges and inland flooding have serious impacts on infrastructure and livelihoods derived particularly in the informal sector in urban areas. Cyclone-related flooding and heavy rains damage roads, bridges, shops, houses and other infrastructure.

Business incurs losses from floods when trading is halted; products are destroyed; and in repairing flood and water damage. Moreover, the informal sector particularly street vending is adversely affected by heavy rainfalls and floods as they cannot operate their businesses. Often their livelihood and food security are highly depended on income derived from daily sales of commodities.