



# Climate Change, Agriculture and Food Security in Southern Africa

## The need for policy alignment

### Introduction

Food security in southern Africa is an elusive goal. Even without the impacts of climate change, agricultural systems are not meeting the needs of large numbers of people, and half the region's population may be defined as undernourished. While the role of food production as one component of food security is clear, the other components (availability, access, utilisation) are still poorly understood. Climate change, an immediate and unprecedented threat to millions who depend on small-scale rainfed agriculture and natural ecosystems for their livelihoods, will compound these challenges, impacting negatively on the capacity of already stressed food systems to meet the rapidly increasing needs of urbanising populations. This brief focuses more on the impacts of climate on production, and further work is required to develop understanding and policy responses to climate impacts on the other food security components (Ziervogel and Ericksen, 2010).

Innovative ways of working must be found to address this complex challenge. Partnerships between different constituencies, including farmers, consumers, researchers and policy makers, need to be supported by integrated approaches.

A particular challenge for the region lies in the need to align sectoral policies with climate change strategies and international commitments. As a result of inadequate knowledge of climate change policy development and low levels of institutional capacity, policy review cycles have been misaligned and there has been insufficient inter-ministerial action and communication. While there is still much uncertainty

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### Policy recommendations

- Develop an evidence-based understanding of agricultural and food systems underpinning the deteriorating regional food security situation, and the role of climate and climate shocks in increasing the vulnerability of people in agriculture-based socioeconomic systems.
- From this, develop actionable climate change plans that include a time-bound statement of where the region/country needs to be in terms of climate change preparedness, specifically in terms of their food security situation.
- Facilitate better coordination between ministries in national and sector-specific planning to ensure strong linkages between climate change policies, food security and other relevant sectors, including water resource management, power generation, health and human development.
- Take a risk reduction and risk management approach to food security policies that accommodates future climate uncertainty. This needs to be continuously supported by new research and improved understanding of best and worst case scenarios and their probabilities, and the implications for risk management.
- Focus on the vulnerability of urban areas in terms of food security and climate change with particular emphasis on consolidating water and food security planning for cities.
- Use the opportunity created by existing regional and national platforms to mobilise resources to develop institutional capacity firstly for national and regional strategic and policy framework development integrating climate change and food security, and secondly for the development of implementation capacity to support prioritised responses.



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**A Mozambican marketplace. The main challenge affecting food security in the region is poverty. Its effects are compounded by the impacts of climate change.**

in how climate will interact with food security in the future, there is nevertheless enough existing knowledge to move ahead with the integration and alignment of policy. This, in turn, needs to be continuously supported by new research.

Policy that facilitates change for both mitigation and adaptation outcomes, that promotes adaptable and resilient agriculture and food systems and better environmental management, leading in turn to improved food security and livelihoods, is a critical success factor. In particular, climate change issues need to be mainstreamed into national, regional and international development strategies and institutional agendas. For example, regional market integration and access through policy harmonisation would contribute significantly to developing climate resilience. Inconsistent policies between countries even within one regional economic community (REC), and between RECs, lead to distorted incentives and barriers to regional food trade, which sees food not reaching those areas in most need following climatic shocks.

### Key regional challenges

Southern Africa faces a fundamental food security challenge – how to deal with the high numbers of people lacking access to adequate food in a context of declining food production, increasing undernourishment and

broader environmental change.

Vulnerability to hunger has been exacerbated by the rising cost of food, with the 2008 food-price spike leading to social unrest and food riots in some countries. Unprecedented demographic changes, particularly increasing and urbanising populations, inevitably increase food demand.

Climate change impacts add to these challenges. Regional food production is critically dependent on optimal local temperatures and precipitation, and any change outside the range of optimal conditions requires farmers to adapt their practices, and poses major challenges to maintaining or increasing productivity and managing risk in a context of diminished resilience.

Will SADC and its member states be able to achieve better policy alignment at the national level, with particular reference to regional agricultural and climate change strategy and policy development? This is a key question.

### Food security context

Southern Africa accounts for approximately a third of sub-Saharan Africa's population, but has 44 percent of its undernourished people (de Wit, 2010). Over the period 2004–2006, an average of 94 million people in SADC, or close to half of the regional population, were undernourished, receiving less than an absolute minimum standard of caloric intake (De Wit, 2010), of whom 44 million undernourished people (73% of total population) live in the Democratic Republic of Congo (DRC). In addition, Tanzania, Mozambique, Angola, Madagascar, Angola, Zambia, Zimbabwe and Malawi all have sizeable undernourished populations (see Table 1). The proportion of the population which is undernourished has increased in some countries, indicating that population growth is hampering efforts to bring these numbers down. Although the absolute number of undernourished people increased, the rate at which the number of undernourished people changed decreased substantially between 1990 and 2006.

Generally, most SADC countries are not reaching the minimum calorie intake of 2 100 kcal/person/day. Worse still, daily calorie intake in almost half of all SADC countries has declined compared to the early 1990s (de Wit, 2010). Importantly, food production per person has also stagnated in SADC, with most countries reporting a notable decline in food production per person since the early nineties (De Wit, 2010). Recent exceptions to the general trend include Angola and Malawi, and to a lesser extent Namibia and Mozambique.



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Immature maize in the Zomba district of Malawi, the result of three rainless weeks during the recent growing season, leading to widespread food shortages. Climate change will impact negatively on already stressed food systems.

Table 1: Numbers of undernourished people in SADC

Country/region	1990–1992, mil Undernourished	1995–1997, mil Undernourished	2000–2002 mil Undernourished	2004–2006, mil Undernourished
TOTAL SADC (excl. RSA)	51.1	74.4	85.8	94.3
DRC	11.4	26.5	36.6	43.9
Tanzania	7.4	12.1	12.5	13.6
Mozambique	8.2	8.6	7.9	7.5
Angola	7.2	7.3	7.4	7.1
Madagascar	3.9	5.4	6.1	6.6
Zambia	3.3	3.9	4.8	5.2
Zimbabwe	4.3	5.5	5.5	5.1
Malawi	4.3	3.7	3.5	3.8
Botswana	0.3	0.4	0.5	0.5
Namibia	0.4	0.5	0.4	0.4
Lesotho	0.2	0.2	0.3	0.3
Swaziland	0.1	0.2	0.2	0.2
Mauritius	0.1	0.1	0.1	0.1

Source: De Wit, 2010

Note: SADC countries are Angola, Botswana, Democratic Republic of Congo (DRC), Lesotho, Madagascar, Malawi, Mauritius, Mozambique, Namibia, South Africa, Swaziland, Tanzania, Zambia, Zimbabwe. Seychelles will reapply for SADC membership in 2011. South Africa is mostly excluded from the analysis as the country has very little undernourishment (as defined by the FAO) and will skew the analysis.

These factors reflect a chronic food security crisis that has unfolded across southern African since early 2000. Many more people are now living 'close to the edge' and are consequently unable to absorb shocks or stresses (Drimie and Casale, 2009).

The underlying causes of this crisis take the form of a knot of multiple stressors, compounded by a series of recurrent food shocks, and exacerbated by the AIDS epidemic. Multiple stressors include any changes that manifest as shocks (e.g., floods, job losses, death, volatile market prices) or gradual changes (e.g., land degradation, deterioration of health care systems). Added to these stressors, a range of other factors will need to be taken into account going forward. These include changing patterns of population growth, composition and spatial distribution, particularly with regard to migration and urbanisation; changes in consumption patterns and increased pressure on food production, distribution and processing; and shifts in economic behaviour with related changes in dietary demands.

Women and children are particularly vulnerable to food insecurity. According to the World Bank (2008) they are 'frequently underestimated and overlooked in development strategies'. Furthermore, there is a general failure to recognise the roles, differences and inequities between men and women in the agricultural development agenda. Women in rural areas are the most vulnerable. A recent study covering 27 sub-Saharan countries shows them to be 68 percent more likely to be malnourished than their urban counterparts (Uthman and Aremu, 2008).

De Wit (2010) argues that the problem of undernourishment in southern Africa is very strongly associated with a lack of food consumption, which is influenced by a lack of own production at national level. This means that the quicker the rate of total own national production decreases, the faster the number of people undernourished increased in southern African countries.

As a result of these persistently high levels of undernourishment, the stagnation of own production and own consumption, and an increasing dependence on imported food, combined with declining terms of trade and local issues relating to food prices, availability of labour and market access, southern African countries have become increasingly vulnerable to shocks that may disrupt food supplies or diminish the ability to increase food consumption.

### Climate change an additional stressor

Climate change will compound the factors that produce food shocks. Agriculture is very vulnerable to climate change impacts (Nelson *et al.*, 2009): expected increases in rainfall variability, shifts in the rainy season with more unpredictable timing of the first and

last rains (Tadross, *et al.*, 2007), more intense rainfall events with longer dry spells, and higher temperatures can result in reduced yields and pest proliferation.

The overall impacts of climate change on agriculture, particularly in southern Africa, are thus expected to be negative, threatening regional food security (Lobell *et al.*, 2008). The consequences for human wellbeing are obvious, and policymakers need to base their risk reduction and management approaches on the certainty of climate change and its negative impacts (irrespective of whether total rainfall increases or decreases, which cannot be known with certainty for many areas). Activities that support agricultural adaptation will also enhance food security and help provide the rural poor with resources to help them adapt to climate change.

### Key definitions

**Food security** exists when all people, at all times, have physical, social and economic access to sufficient, safe and nutritious food that meets their food preferences and dietary needs for an active and healthy life. Household food security is the application of this concept to the family level, with individuals within households as the focus of concern (FAO/WFP, 2009).

**Undernourishment** exists when caloric intake is below the minimum dietary energy requirement (MDER). The MDER is the amount of energy needed for light activity and a minimum acceptable weight for attained height, and it varies by country and from year to year depending on the gender and age structure of the population (FAO/WFP, 2009).

**Coping strategies:** strategies that have evolved over time through peoples' long experience in dealing with the known and understood natural variation that they expect in seasons combined with their specific responses to the season as it unfolds.

**Climate change:** any change in climate over time, whether due to natural variability or as a result of human activity (IPCC, 2007).

**Adaptive capacity:** The ability of a system to adapt to climate change (including climate variability and extremes) to moderate potential damages, to take advantage of opportunities, or to cope with the consequences (IPCC, 2007).

**Resilience:** The ability of a social or ecological system to absorb disturbances while retaining the same basic structure and ways of functioning, the capacity for self-organisation, and the capacity to adapt to stress and change (IPCC, 2007).

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Women prepare food in the traditional way in the Gaza province of Mozambique. A recent study shows that women in rural areas are very vulnerable and are more likely to be malnourished than their urban counterparts.

### Implications for agriculture and food security policies

It is within this context that there needs to be simultaneous development of climate change responses aimed at agriculture and food security, including sustainable resource and land use, appropriate risk management and the building of climate resilience.

Climate change impacts are not expected to be homogeneous across the region, intensifying the need for improved food trade between production surplus and deficit regions. Developing high-temperature resistant crops and promoting efficient irrigation systems are direct response strategies. The return on additional investment in irrigation systems can be high, but a number of hurdles remain which pose several difficulties, such as technological barriers, access to sufficient water resources and constant power, and funds for production investment. Since water resources will also be directly impacted by climate change and become less secure, care needs to be taken not to develop 'maladaptive' policy responses around increased irrigation.

The vulnerability of the farming sector and households to climate change will vary. Some regions or households have a larger adaptive capacity than others. Such regions may face a greater exposure to extreme events and climate variability but, with greater access to resources, infrastructure and relevant context-specific



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information, will be in a better position to cope and adapt. Farmers should be supported by promoting farmer education programmes, by improving their access to weather forecasting and through research on affordable farm-level climate adaptation technologies. More integrated farming systems and diversified crops and livestock, combined with better access to credit, and to markets, would also be beneficial.

At national and regional level, more accurate estimates of crop production will contribute to reducing price volatility as information on the current situation and outlook for agriculture shapes expectations about future prices and allows markets to function more efficiently. An indirect response strategy is to diversify, from a largely subsistence agricultural economy and a country's dependence on agriculture, and increase national and household wealth. This in turn will provide rising incomes that improve the ability to adapt at a household level. Diversification at all scales is a form of risk management, with beneficial results for both food security which is currently weakened by the high dependence on rainfed monoculture (primarily maize), and to provide resilience to future climatic changes and shocks.

Activities that support agricultural adaptation will also enhance food security, and, conversely, anything that results in increased food security will provide the poor, especially the rural poor, with the resources that will help them adapt to climate change.

Regional programmes and platforms which bring together role players and decision makers, for example the platforms provided by FANRPAN (Food and Natural Resources Policy Analysis Network) and CAADP (Comprehensive Africa Agriculture Development Programme), can play an increasingly important

**A community maize store, managed by a village civil protection committee, in the Salima district of southern Malawi. The vulnerability of households and communities will depend on adaptive capacity.**

role in informing national and regional policy development. Their efforts to promote the integration of climate change into agricultural policy provides opportunity for support for national policy processes, and enhanced regional mobilisation of resources for climate change responses.

## Conclusion

Clearly, national and regional institutions, climate negotiators and policymakers need to identify pathways for better policy alignment at national levels with particular reference to regional agricultural and climate change strategy and policy development, as well as international commitments. Thus, in anticipation of the serious impacts and interactions between climate change, agriculture and food security in southern Africa, a policy framework should be developed by national governments with support from the Southern African Development Community (SADC). A useful approach which shows promise in the region, is the method of scenario development and analysis (both qualitative and quantitative) to guide a systems-based policy identification and prioritization process across multiple inter-dependent sectors. This should lead to clear time-bound and measurable strategies and plans to further agricultural and food security development objectives, whilst simultaneously ensuring that these will be both sustainable and adaptive/mitigative, given projected climate change impacts across the region.



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## The Regional Climate Change Programme Southern Africa (RCCP)

The RCCP aims to contribute to the achievement of southern Africa's climate change adaptation needs, socioeconomic development and poverty alleviation objectives, including the Millennium Development Goals.

By synthesising the relevant climate change science, developing strategic research and strengthening science-policy-governance-finance dialogue, the RCCP will build an evidence base for appropriate transboundary responses, strengthen the region's voice on international platforms and negotiations, and enhance its ability to equitably access the necessary finance for effective climate change adaptation.

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