RESEARCH PROGRAM ON Climate Change, Agriculture and Food Security

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ILRI INTERNATIONAL LIVESTOCK RESEARCH INSTITUTE

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german cooperation DEUTSCHE ZUSAMMENARBEIT

Implemented by:

giz Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) GmbH

CCARDESA
Centre for Coordination of Agricultural Research and Development for Southern Africa

SADC Futures
Developing Foresight Capacity for Climate Resilient Agricultural Development

Mega-trends in the Southern African region

FUTURE CLIMATE FOR AFRICA

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GCRFAFRICAP
CLIMATE SMART AGRICULTURAL DEVELOPMENT

Citation:
Lipper L and Benton TG. 2020. Mega-trends in the Southern African Region. SADC Futures: Developing Foresight Capacity for Climate Resilient Agricultural Development Knowledge Series. CCAFS Report. Wageningen, the Netherlands: CGIAR Research Program on Climate Change, Agriculture and Food Security (CCAFS). Available online at: www.ccafs.cgiar.org.

Published by the CGIAR Research Program on Climate Change, Agriculture and Food Security (CCAFS).

The CGIAR Research Program on Climate Change, Agriculture and Food Security (CCAFS) is a strategic partnership of CGIAR and Future Earth, led by the International Center for Tropical Agriculture (CIAT). The Program is carried out with funding by CGIAR Fund Donors, Australia (ACIAR), Ireland (Irish Aid), Netherlands (Ministry of Foreign Affairs), New Zealand Ministry of Foreign Affairs & Trade; Switzerland (SDC); Thailand; The UK Government (UK Aid); USA (USAID); The European Union (EU); and with technical support from The International Fund for Agricultural Development (IFAD).

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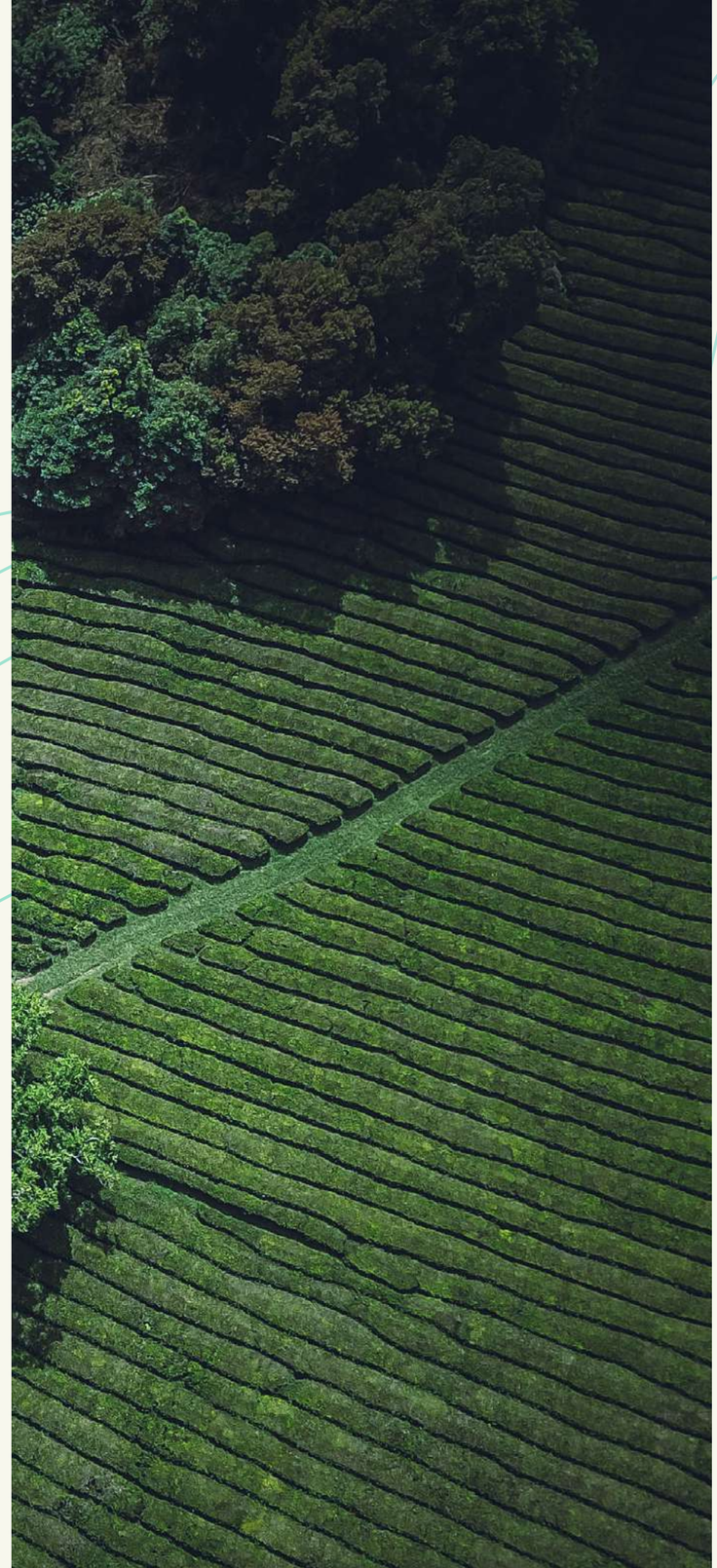
Series Editor: Lili Szilagyi
Design and Layout: Debra-Jean Harte

Cover Photo: Etienne Boulanger-unsplash

ACKNOWLEDGEMENTS

The authors would like to acknowledge researchers and stakeholders involved in the project GCRF AFRICAP.

The Agricultural and Food-system Resilience: Increasing Capacity and Advising Policy (AFRICAP) program is a four-year research program focused on improving evidence-based policy making to develop sustainable, productive, agricultural systems, resilient to climate change. The program is being implemented in Malawi, South Africa, Tanzania, Zambia, and the UK led by the University of Leeds, in partnership with the Food, Agriculture and Natural Resources Policy Analysis Network (FANRPAN), a pan-African multi-stakeholder policy network. Implementing Partners are University of Aberdeen; the UK Met Office; Chatham House; the Civil Society Agriculture Network (CISANET), Malawi; Department of Agriculture Research Services (DARS), Malawi; National Agricultural Marketing Council (NAMC), South Africa; Economic and Social Research Foundation (ESRF), Tanzania; and the Agricultural Consultative Forum (ACF), Zambia.



SADC Futures
Developing Foresight Capacity for Climate Resilient Agricultural Development

ABOUT THE SADC FUTURES PROJECT

In these highly uncertain and rapidly changing times, the SADC region, like many regions in Africa, remains fundamentally dependent on a resilient agricultural system and natural resource base. Climate change still poses the greatest threat to the agricultural system and therefore technical capacity is needed to address these future impacts and adapt plans, policies and programs. Taking into account alternative futures, the SADC Futures project has produced tailored supporting materials and documents as part of a wider approach for foresight training in the region. These documents and the associated foresight framework aim to equip users to practically apply the range of foresight tools and methods for innovative strategic planning and policy formulation for climate resilience.

This SADC Futures Project is a joint initiative of the SADC Secretariat's Food, Agriculture and Natural Resources (FANR) Directorate, the Centre for Coordination of Agricultural Research and Development for Southern Africa (CCARDESA), the International Livestock Research Institute (ILRI) through the CGIAR Research Program on Climate Change, Agriculture and Food Security (CCAFS) and German Development Cooperation facilitated through the SADC / Deutsche Gesellschaft fur Internationale Zusammenarbeit (GIZ) GmbH 'Adaptation to Climate Change in Rural Areas' program (ACCRA), funded by the German Federal Ministry for Economic Cooperation and Development (BMZ).

Photo: ©Neil Palmer (CIAT)

SADC FUTURES FORESIGHT FRAMEWORK

Input
Understanding our context

Analysis
What is happening?

Interpretation
Why is it happening?

Plan
What do we want to experience in the future? What might get in our way? What might we do to get there?

Prospection
What might happen that we have not thought about?

Reflection
What might we want to do differently?

Strategy
What will we do differently?

Data, evidence, knowledge and creativity

Stakeholder engagement and participation

INPUT

Context

- Scope
- Theme or key topic
- Geopolitical boundary
- Structures & policies
- Timeline
- Stakeholder Mapping

ANALYSIS

What is happening?

- Trend Analysis
- Horizon Scanning
- Evidence

INTERPRETATION

Why is it happening?

- Systems Mapping
- Cross sectoral and multi-stakeholder approaches

PLAN

What do we want to experience in the future? What might get in our way?

What might we do to get there?

- Visioning
- Causal Analysis
- Stakeholder Analysis
- Backcasting
- Pathway Development & Trade-offs

PROSPECTION

What might happen that we have not thought about?

- Developing Scenarios
- Identify drivers and critical uncertainties
- Develop plausible future scenarios

REFLECTION

What might we want to do differently?

- Scenario Implications
- Transformation Elements
- Transformational Change

STRATEGY

What will we do differently?

- Transforming Climate Resilient Pathways

SADC Futures
Developing Foresight Capacity for Climate Resilient Agricultural Development

ABOUT THE SADC FUTURES KNOWLEDGE SERIES

To expand on the foresight and futures capacity building the project has produced a series of accompanying knowledge products and sources. The knowledge series mapped to the SADC Futures foresight framework is shown below.

These can all be found on the SADC Futures webpage https://bit.ly/SADCFuturesForesight.

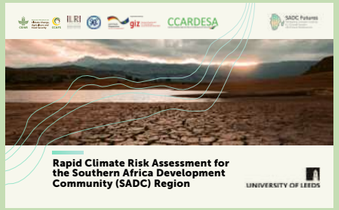
INPUT

Structures, Policies and Stakeholder Landscape Relevant to Climate Change and Agriculture in the SADC Region

ANALYSIS

Historical Analysis of Climate Change and Agriculture Related Events in SADC

Mega-trends in the Southern African Region



Rapid Climate Risk Assessment for the Southern Africa Development Community (SADC) Region

INTERPRETATION

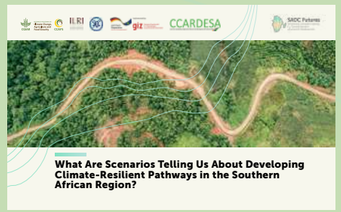
Systems Analysis and Sectoral Linkages Impacting Climate Resilient Development in the SADC Region

PLAN

Climate Resilient Development Pathways

SADC Futures Foresight Training Toolkit

PROSPECTION



What Are Scenarios Telling Us About Developing Climate-Resilient Pathways in the Southern African Region?

REFLECTION

STRATEGY

Applying Foresight For Enhanced Climate Resilience and Agriculture Policy Development in the SADC Region

Photo: Jaromír Kavan-unsplash

CONTENTS

ACRONYMS AND ABBREVIATIONS

ACCRA	Adaptation to Climate Change in Rural Areas
ACF	Agricultural Consultative Forum
AfDB	African Development Bank
AFRICAP	Agricultural and Food-system Resilience: Increasing Capacity and Advising Policy
APEI	Accelerated Program for Economic Integration
APPSA	Agricultural Productivity Program for Southern Africa
BMZ	German Federal Ministry for Economic Cooperation and Development
C&B	Checks and Balances
CAADP	Comprehensive African Agriculture Development Program
CCAFS	Climate Change, Agriculture and Food Security
CCARDESA	Coordination of Agricultural Research and Development for Southern Africa
CGIAR	Consultative Group for International Agricultural Research
CISANET	Civil Society Agriculture Network
COMESA	Common Market for Eastern and Southern Africa
COVID-19	Coronavirus 2019
DARS	Department of Agriculture Research Services
DRC	Democratic Republic of Congo
EAC	East African Community
ECOWAS	Economic Community of West African States
ESRF	Economic and Social Research Foundation
EU JRC	European Union Joint Research Centre
FANR	Food, Agriculture and Natural Resources
FANRPAN	Food, Agriculture and Natural Resources Policy Analysis Network
GCRF	Global Challenges Research Fund
GDP	Gross Domestic Product
GIZ	Deutsche Gesellschaft fur Internationale Zusammenarbeit
HCI	Human Capital Index
HDI	Human Development Index
HIV/AIDS	Human Immunodeficiency Virus/Acquired Immunodeficiency Syndrome
IFAD	International Fund for Agricultural Development
ILRI	International Livestock Research Institute
IPCC	Intergovernmental Panel on Climate Change
ISS	Institute for Security Studies
MDG	Millennium Development Goal
NAMC	National Agricultural Marketing Council
PWC	Pricewaterhouse Coopers
RAIP	Regional Agricultural Investment Policy
RAP	Regional Agricultural Policy
RCP	Representative Concentration Pathway
REC	Regional Economic Community
RISDP	Regional Indicative Strategic Development Plan
RTA	Regional Trade Agreement
RVAA	Regional Vulnerability Assessment and Analysis
SACU	Southern Africa Customs Union
SADC	Southern African Development Community
SAPP	Southern African Power Pool
SDG	Sustainable Development Goal
SME	Small and Medium Enterprise
SSA	Sub-Saharan Africa
TUNA	Turbulent, Uncertain, Novel, Ambiguous
UK	United Kingdom
UN	United Nations
US	United States
USD	United States Dollar
WEF	World Economic Forum

CONTENTS

Figures and Tables

Executive Summary

This study aims to **describe recent developments in the Southern African region by documenting a set of mega-trends defining social, economic, political and environmental conditions**. It includes analysis of the recent past as well as projections of future trends. To the extent possible, the report is based on information from 2010 to the present, except in some cases where more recent information was not available. The purpose of this analysis is to get a snapshot of current conditions in the Southern African region and the dynamics that generated them, to inform the design and implementation of investments to secure climate-resilient agricultural livelihoods in the region.

The study goes beyond simply tracing trends, however, and provides guidance on how the information can best be used in making plans for the future. The mega-trend analysis gives insights into forces that will shape the future but does not provide predictions of the future. Humans are typically very linear thinkers and tend to look at trends from the past and project them forwards into the future, and we often fall into the trap of thinking that the future is defined by what has happened in the past. There is considerable uncertainty over how several of these mega-trends will play out in the near future, with the possibility of major disruptions and changes on the horizon. This can be seen quite clearly in the impact of the COVID-19 pandemic which is still unfolding, and which is already disrupting expectations of future conditions.

This uncertainty of future conditions greatly complicates decision-making today. To address this complication, the development of scenarios to identify a range of plausible futures is an important tool for decision-makers. In the final section of the report we give examples of recent scenario work in the region to illustrate how the analysis of mega-trends and their uncertainties can be useful in strategic decision-making under uncertainty.

Summary of mega-trends analysis

Three main conclusions emerge from the analysis of the 17 mega-trends. These are:

1. The Southern African region has tremendous resources and capacity to achieve climate-resilient agricultural livelihoods. Specifically, the region has:

- Considerable endowments of natural resources;
- Relatively high levels of per capital GDP for most countries;
- Achieved high rates of economic growth in recent past;
- Achieved nearly universal coverage of basic education;
- Seen significant improvements in women's empowerment;
- High rates of urbanization;
- Relatively low levels of distortions in regional trade;
- Increasing levels of intra-regional trade; and
- Good potential for developing renewable energy sources.

2. The region is facing tremendous challenges and has not yet effectively addressed them. Specifically, the region has:

- Very high numbers of people of extreme poverty, concentrated in rural areas and projected to increase;
- The highest level of income inequality in Africa which is still rising;
- Stagnating economic growth rates in most recent years;
- Poor agricultural performance persisting over decades;
- Major challenges arising from climate change in terms of water availability and distribution and areas adapted to agricultural production;
- Relatively weak performance in regional integration; and
- Low scores on institutional quality and forward-looking thinking of governments for most countries.

3. Greater regional integration is likely to be necessary to achieve climate-resilient agricultural livelihoods. Specific aspects are:

- Expansion of regional trade in water is increasingly important due to differential effects of climate change on rainfall and water availability throughout the region. This will affect agricultural production, electricity supply and access to water for human consumption;
- Development of regional market can be key driver of industrialization;
- Development of regional food production and expansion of regional food trade can enhance food security and reduce external debt;
- Development of regional agricultural value chains can not only underpin increased regional food production and trade, but also enhance employment opportunities; and
- Expansion and improvement of regional infrastructure is essential to achieve other benefits of regional integration.

Specific highlights from the megatrend analysis indicate that:

Population is expected to continue increasing up to 2050, but at a lower rate than the recent past. Countries in the Southern African region will experience a large growth of the youth population during the same period. Rural population is expected to decline slightly in some of the countries, and increase in others.

The region has the highest level of **urbanization** in sub-Saharan Africa and is expected to remain so up to 2050. Increasing urbanization is due mostly to population growth in urban areas and reclassification of rural areas as urban as population densities increase. Rural-urban migration is less important as a driving force of urbanization.

Dietary trends in the Southern African region are bifurcated with higher income groups following the classic transition to higher levels of meat consumption and highly refined foods, while high rates of under- and malnutrition are found amongst the poor and in rural areas.

The region is being squeezed by a double burden of health risks: for the poor health risks are driven by undernutrition and stunting, as well as high vulnerability to communicable diseases such as HIV/AIDS and malaria. On the other hand, for those with higher incomes poor diets leading to obesity and growth of non-communicable diseases is becoming a major issue.

There are high and persistent levels of **extreme poverty** with significantly higher levels in rural areas. The numbers of extreme poor are projected to increase up to 2040 in the region although the percentage of the population in poverty is expected to decrease. Low levels of economic growth and high levels of inequality in access to key productive assets inhibit successful and broad poverty reduction.

Most countries in the region have inherited colonial legacies of unequal land distribution and are seeking ways to reform them. The systems of **land tenure** are diverse across the region but customary systems are important for most. Common needs for land tenure systems are more transparency and systems that allow greater access and security of women to land.

At present the region is witnessing **growth in medium-sized farms** owned by urban and rural elites, as is the case in other parts of sub-Saharan Africa. In the small farm sector there is a high and increasing degree of fragmentation.

Women have significantly less access to productive assets and education. However, considerable progress has been made in women's political participation and representation and also in some countries in increasing education levels of women.

The Southern African region is characterized by low levels of **energy access**, particularly in rural areas. Planned expansion of energy infrastructure is mostly aimed at industrialization and urban areas. Hydropower is an important component of the energy supply and is likely to be affected by climate change. Energy demand is projected to grow rapidly up to 2050 due to expansion in the industrial sector with potential for major expansion from decentralized and renewable sources, particularly wind and solar.

The Southern African region had the lowest levels of **economic growth** in Africa in 2017 and 2018, after several years of having the highest levels of growth. Projections of growth have been significantly reduced due to expected impacts from the COVID-19 pandemic.

The contribution of the **agricultural sector** to **GDP** is generally quite low across all countries in the Southern African region, but its share in employment is generally highest amongst sectors. **Youth unemployment** is a significant problem across all countries in the region. Food prices have increased in the region as have food imports, despite expansion of food production in the region.

Land degradation is a major problem in virtually all countries in the Southern African region, and is a major contributor to the low agricultural productivity in the region. Contributory factors include poor soils, land fallows that are reducing or being eliminated with population pressures, and nutrient mining due to lack of attention to soil management and very limited use of inputs that could conserve and restore soil quality.

Water scarcity in the southern part of the Southern African region is expected to worsen with climate change and threatens not only agricultural production, which is largely rainfed, but also economic development where hydropower plays an important role. The northern countries of the region have abundant water supplies and thus regional management is important but not yet fully operational.

The Southern African region is characterized by low or even **negative productivity growth in agriculture**, with most of the growth obtained through agricultural land expansion rather than more efficient use of agricultural inputs. At present the most productive agricultural lands are relatively small areas of irrigated land in the arid south. The northern areas have greater potential for expansion of agricultural activities. In recent years, middle income countries have generally done better than low income countries in achieving both land and labour productivity growth for crops and overall productivity for livestock production. Post-harvest losses in the region as a whole are over 30%.

The Southern African region is one of the most stable politically in Africa, albeit cases of **political strife** and even **armed conflict** have occurred recently in the region. The level of regional integration is complicated by the overwhelming strength of the South African economy compared with other countries in the region. The weakest aspects of regional integration are infrastructural (including water management and electricity). Successful coordination in managing water is essential to achieving the region's development goals but has not yet been attained.

Introduction: The Role of Events in Shaping the Future

01

This document provides a **summary of mega-trends** relevant to consider in the context of building plans and investments to support climate-resilient livelihoods in the Southern African region. These mega-trends are associated with driving appreciable change, whether through attitudinal, behavioural, economic or environmental mechanisms. The trends identified as **"mega"** depend to an extent on the context and institution describing them. For example, PwC[1] describe five: urbanisation, climate change and resource security, shifting global power, demographic and social change, and technology, whereas the UN[2] adds poverty and inequality, shocks and crises (as well as development finance) to their list. This report provides a synthesis of 15 mega-trends most relevant for the regional context, covering social, economic, technology, environmental and political processes.

While reviewing these results, it is important to keep in mind how they should be interpreted in the context of building climate-resilient livelihoods in the Southern African region. The **mega-trend analysis gives insights into forces that will shape the future** but does not provide predictions of the future. Humans are typically very linear thinkers and tend to look at trends from the past and project them forwards into the future, and we often fall into the trap of thinking that the future is defined by what has happened in the past. However, as 2020 has already shown, the future is not a simple linear extrapolation of trends, unfolding in a constant and gradual way. Instead, **"events happen"** and sometimes these events are both highly impactful and disruptive.

Such events can arise for two main reasons. Firstly, **"black swan"** events are rare, but with very high impact; perhaps both unexpected and unprecedented. The COVID-19 pandemic is arguably such an event. Secondly, a single event (a hazard) or multiple hazards, can occur, and alone or together can create chains of interacting effects that cascade across borders. For example, the food price shocks of 2007-8 and 2010-12 created ripple effects that impacted across the world and arose from relatively minor climate events interacting with other policy areas (biofuel policy), and a lack of transparency of stocks, leading to an over-amplification of market dynamics. In extremes, **"risk cascades"** or **"black swan"** events can create systemic risks (Challinor et al. 2018; Homer-Dixon et al. 2015) that have the potential to re-shape economies and societies.

[1] https://www.pwc.co.uk/issues/megatrends.html (Last accessed: 7 August 2020) [2] http://www.undp.org/content/undp/en/home/librarypage/sustainable-development-goals/global-trends--challenges-and-opportunities-in-the-implementatio.html (Last accessed: 7 August 2020)

As time goes on, our economic systems are growing in fragility (Homer-Dixon et al. 2015). To illustrate, take food security—consistent and reliable access to nutritious food—which is typically supplied through a combination of local production, and regional and global trade. The latter has become more important with growing market integration across borders, creating increasing dependencies on imports and exports. Agriculture depends on water, land, supply of labour and in many parts of the world, also chemicals and energy. Increasingly, agriculture is also reliant on more advanced technologies like satellite navigation in precision agriculture and transport networks. The drive for economic efficiency also leads to a greater reliance on just-in-time supplies. Food availability therefore relies on a range of sectors, infrastructure, complex logistics, finance, and so on, domestically, regionally and globally to work in concert in order to supply a nation's requirements. The just-in-time nature and sectorial co-dependencies of many food systems mean that any shock (which could be a climate change impact, a change in energy policy, a geo-political disruption) can rapidly propagate around the world.

Proportionally, the impacts of such events are often felt most strongly by those with the lowest levels of wealth and economic resiliency.

Perhaps most importantly, the **spatial and sectoral co-integration** of many human systems means that there is a very large combination of potential shocks, places they could happen, and pathways through which they could propagate to create significant impacts (Challinor et al. 2018). Thus, whilst we often think of "black swans", the number of potential ways that risks can cascade to affect any given country is very large. As such, we should regard events like the global financial crisis, food price spikes, insurgency, pest and disease outbreaks, impactful climate change, crises deriving from movement of people to all be elements of "the new normal". Each event may be a "one-off", but in any given period, we should expect something big to happen.

Our linear-thinking pre-disposes us to think of the future in terms of "business-as-usual" scenarios. But as outlined, the world is highly non-linear, stochastic and complex. Given enough shocks, our expectant realities of locked-in, resilient-to-change "business-as-usual" futures may be reconfigured.

Quoting from United States Global Strategic Trends 2035 (NIC 2017):

"Examining the trends…. makes vivid that the world will become more volatile in the years ahead. States, institutions, and societies will be under pressure from above and below the level of the nation-state to adapt to systemic challenges—and to act sooner rather than later. From above, climate change, technology standards and protocols, and transnational terrorism will require multilateral cooperation. From below, the inability of government to meet the expectations of their citizens, inequality, and identity politics will increase the risk of instability."

In the following sections of this document we describe 15 mega-trends covering social, economic, technological, environmental, governance categories. Climate change is not considered here since a more detailed analysis of this mega-trend in the Southern African region is covered in a separate report. The analysis is based on data and reports from 2010 to present, with time horizons up to 2050. The analysis utilizes material from beyond the southern African region, as in some cases information was only available at the country or sub-Saharan Africa level. In addition, the countries included in the Southern African category varied considerably by source and over the last 10 years. For this reason, the countries included in each of the regional-level analyses are identified.

We conclude the report with a discussion of future uncertainty in the drivers, and the utility of scenario analyses for decision making under uncertainty, giving some recent examples of their use in Southern Africa to examine the future of food systems.

Mega-trends in the Southern African region 02

SOCIAL TRENDS

Demographics

Population rising but at decreasing rate, bulge in youth population up to 2050. Actual level of growth uncertain.

Sub-Saharan Africa (SSA) is expected to experience the highest rate of population growth globally in the coming decades, although there is considerable range in the level of projected increase, depending particularly on changes in total fertility rate. More recent projections are generally lower than previous ones, from an estimate of 4 billion people from the UN world population projection of 2014, to 1.58 billion from a recent Lancet study (Vollset et al. 2020). The increase could be between 50% to 300% per depending on the scenario used.

Projections for the Southern African region indicate population increasing at a decreasing rate arriving at a total of over 80 million by 2050. The population in rural areas is expected to decline slightly to just under 20 million by 2050.

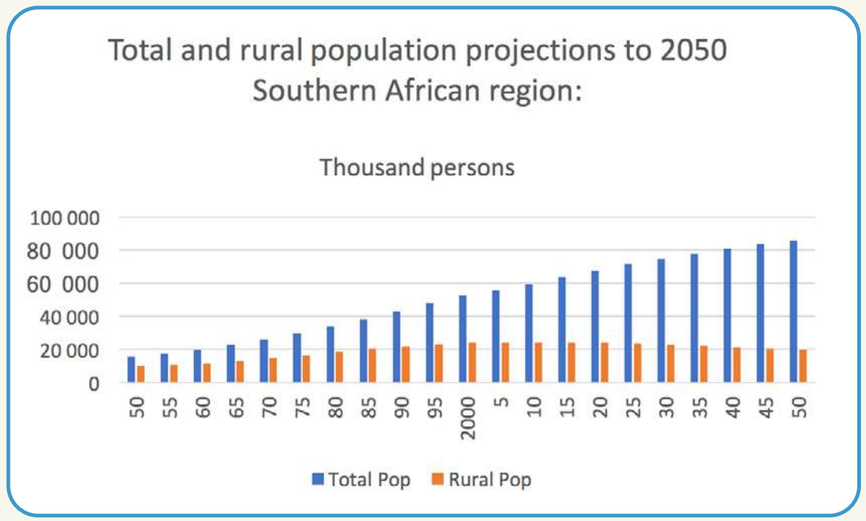


Figure 1. Total and Rural Population Projections to 2050 Southern African Region
Source: UN World Population Prospects[4]


Photo: Antoine Pluss-unsplash

In 2018, the estimated population of the Southern African region was 345.2 million (SADC 2018). The largest population share in the region in 2018 was in the Democratic Republic of Congo (DRC) (26.6%) followed by South Africa (16.7%) and Tanzania (15.7%) (SADC 2018). In the region, overall, there has been a downward trend in mortality, particularly infant and child mortality. The combination of high fertility and declining mortality has been largely responsible for the rapidly increasing population of the region.

Figure 2 shows projections of the per cent of population aged 15-64 years—e.g., the projection of the size of the labour force for the Southern African region. As can be seen, the median projection indicates high increases up to 2040 with a gradual decline thereafter. Although there is some uncertainty in the level of growth, there is clearly an expansion of youth into the labour force in the next 10 to 20 years.

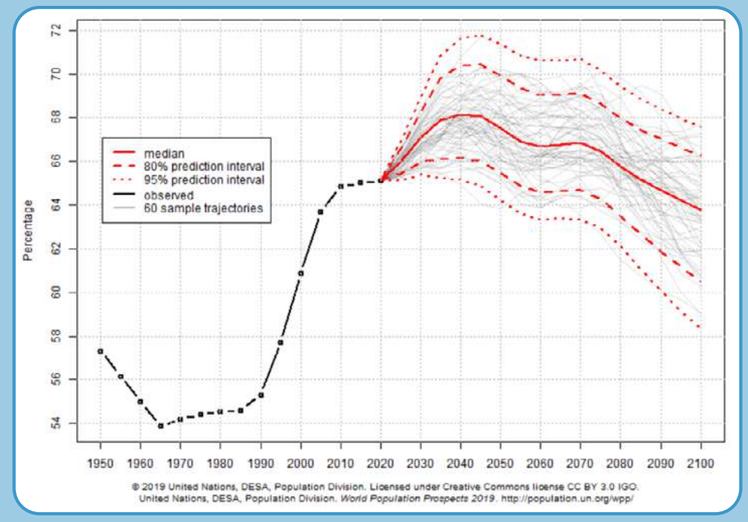


Figure 2. Percentage of population aged 15-64 years in the Southern African region **Source:** UN World Population Prospects[5]

[3] In this context, the Southern African region includes Botswana, Eswatini, Lesotho, Namibia, South Africa and Zimbabwe [4] Author's download of data from: https://population.un.org/wpp/ [5] Author's download of data from: https://population.un.org/wpp/

Urbanization

Urbanization rates are highest in the Southern African region compared with rest of Africa, mostly from population growth in urban areas and reclassification of rural areas as urban as population densities increase.

Africa's urban population is projected to expand around three-fold from 360 million in 2015 to 1,137 million by 2050 (Jayne et al. 2017). Around 55% of the continent's population will live in urban areas by the middle of the century (Cleland and Machiyama 2016). Most of this growth is from urban population growth rather than migration, or areas that were previously considered rural being reclassified as urban as population densities increased (Jayne et al. 2017). This is consistent with findings that a large share of Africa's urban population is now residing in secondary and tertiary towns, which tend to have close links with economic activity in surrounding rural areas. Farming and agri-food systems are therefore likely to play a significant role in employment growth in these urban areas.

In the Southern African region, the overall trend has been towards increasing urbanization of the population in most countries with the exception of Mauritius and Eswatini which exhibit de-urbanizing trends. The percentage of urban population in Mauritius decreased from about 44.0% in 2000 to 42.8% in 2011; while, in Eswatini the proportion of urban population declined from 23.1% in 1997 to 22.1% in 2007 (SADC 2013a). In other areas of the region, urban population growth rates are higher than national totals. In contrast to the situation in other areas of sub-Saharan Africa, in-migration to urban areas is a major source of urban population growth in the Southern African region (SADC 2013a).

Figure 3 shows projected urbanization rates for the UN designated Southern African region. It indicates that the level of population living in urban areas is higher in the region compared with all other African regions, and it is projected to remain so up to 2050.

[6] Author's download of data from: https://population.un.org/wup/DataQuery/

Photo: Shashank Hudkar-unsplash

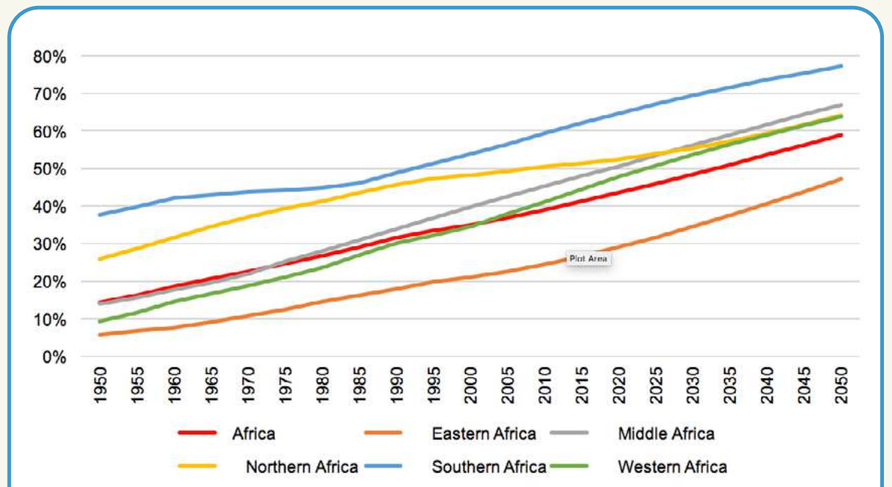


Figure 3. Urbanization rates 1950-2050: All African regions. **Source:** UN World Population Prospects[6]

Dietary transition

Urban and higher income groups are likely to transition to highly refined food high in calories and fat while for rural and poor groups high levels of food insecurity and nutritional deficits will remain.

The typical diet of Southern African consumers has been changing over recent years, in response to driving forces of urbanization and income growth. The trend in dietary changes follow the general trend outlined by Popkin (2003), where the nutrition transition develops over time with five fairly distinct phases, with most countries between phases 3 and 5. The general trend is the abandonment of wholesome traditional and predominately plant-based diets at stage 3 to highly refined food typically high in energy, saturated fats, salt and simple sugars/caloric sweeteners at stage 4.

Botswana, Eswatini, Lesotho and South Africa are believed to be moving rapidly from stage 3 to stage 4 of the nutrition transition, although in some countries there are intra-country differences (Nnyepi et al. 2015). The dietary transition is analysed via consumption of edible oils, sugar and sweeteners to demonstrate dietary shifts from wholesome traditional foods for these countries in Southern Africa. These foods were selected in part because they provide significant energy but are largely devoid of other nutrients.

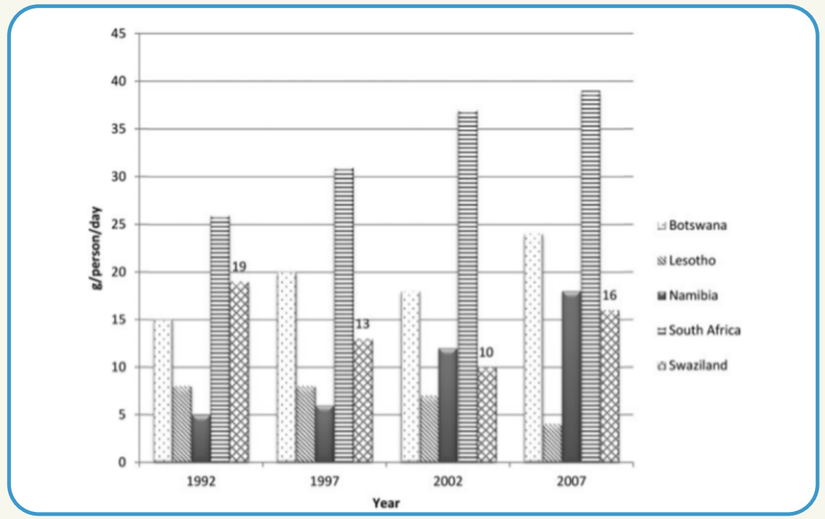


Figure 4. Evidence of nutrition transition in Southern Africa (1). Vegetable oil consumption trends in Southern African countries, 1992-2007. **Source:** Nnyepi et al. 2015

As is evident in the figure above from Nnyepi et al. (2015), overall levels of consumption of edible oils is generally high and increasing over the period 1992-2007.

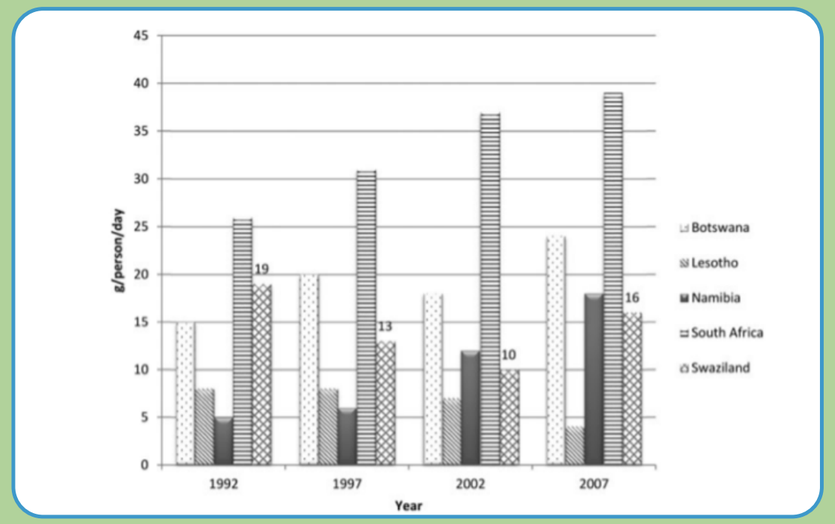


Figure 5. Evidence of nutrition transition in Southern Africa (2). Sugar and sweeteners consumption trends in Southern African countries, 1992-2007. **Source:** Nnyepi et al. 2015

As displayed, Botswana, South Africa and Swaziland have the highest sugar/ sweetener consumption in the region, ranging from 80 to 108 g/person daily. Namibia and South Africa registered a decline in per capita consumption of sugar during this period. Within countries, urban populations, school children, high socio-economic status groups and elderly are found to have the highest sugar consumption levels (Nnyepi et al. 2015).

In Zambia, urban lifestyles and growing affluence in cities are driving a change in and diversification of diets, with the share of food expenditure devoted to maize decreasing significantly in recent years for both rural and urban households (GCRF-AFRICAP 2018). For poor households typically in rural areas, relative expenditure on vegetables has increased but remains low; among wealthier households, expenditure on wheat, rice, potatoes and animal proteins has increased along with the consumption of foods that are high in fat and salt. For low income households approximately half of dietary energy comes from maize and the consumption of nutrient-poor foods—and micronutrient deficiencies are common.

Whilst the dietary transition has followed a common pattern in recent decades, the twin imperatives of mitigating environmental change (particularly climate change) and improving public health, signal the necessity of transforming diets towards healthier, more sustainable eating patterns. [7]Historical trends may therefore not predict future changes, given the costs of past trends are now better understood (see below).

Health and food security

The Southern African region is being squeezed by double burden of health risks: on the one hand undernutrition and stunting, as well as high vulnerability to communicable diseases such as HIV/AIDS and malaria, on the other hand poor diets leading to obesity and growth of non-communicable diseases.

According to the 2019 Regional Vulnerability Assessment and Analysis (RVAA) for the Southern African region, an estimated 41.2 million people in 13 Member States of the Southern African Development Community (SADC)[8] were food insecure in 2019. This was a 28% increase in food insecurity over 2018 for 11 of the SADC countries that reported in both years. Significant increases in the number of people who are food-insecure have been recorded in Zambia (144%), Zimbabwe (128%), Eswatini (90%), Mozambique (85%) and DRC (80%).

The prevalence of wasting (e.g., low weight-for-age) amongst children under age 5 is above 5% in 7 SADC countries, with some areas above 10%. Stunting prevalence (e.g., low height-for-age) is over 30% in 10 of the SADC countries The graphic below shows the distribution of wasting and stunting (low height-for-age) amongst children across the SADC countries from the latest SADC food security update in April 2020 (SADC 2020b). It is expected that COVID-19 will further exacerbate food insecurity in the region in 2020 and into 2021.

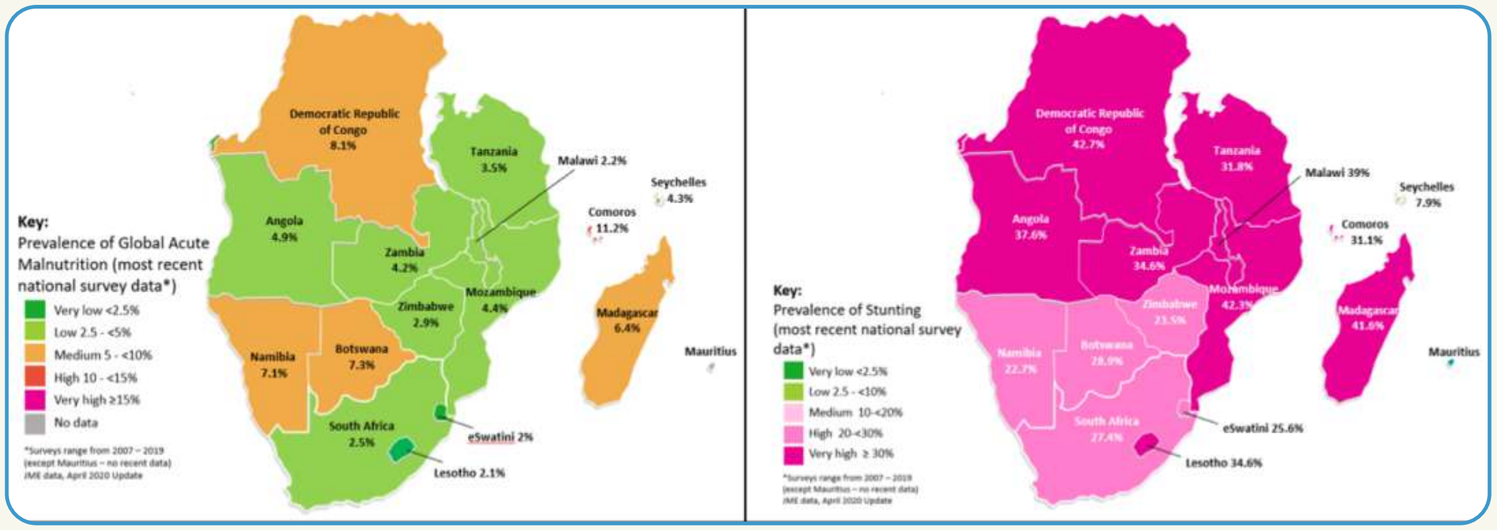


Figure 6. Prevalence of global acute malnutrition (left) and stunting (right) amongst children under 5: SADC region. **Source:** SADC 2020b

[7] E.g., the two recent Lancet Commissions: (1) Willett W et al. 2019. Food in the Anthropocene: the EAT-Lancet Commission on healthy diets from sustainable food systems. The Lancet 393(10170):447-492. (2) Swinburn BA et al. 2020. The Global Syndemic of Obesity, Undernutrition, and Climate Change: The Lancet Commission report. The Lancet 393(10173):791-846. The IPCC's Special Report on Climate Change and Land (2019) https://www.ipcc.ch/srccl also argues for dietary change. [8] SADC is an organization founded and maintained by countries in Southern Africa. It aims to further socio-economic, political and security cooperation among its Member States and foster regional integration in order to achieve peace, stability and wealth. The Member States of SADC are Angola, Botswana, Democratic Republic of Congo, Eswatini, Union of the Comoros Islands, Lesotho, Madagascar, Malawi, Mauritius, Mozambique, Namibia, Seychelles, South Africa, United Republic of Tanzania, Zambia and Zimbabwe.

The Southern African region has been hit hard by the HIV/AIDS epidemic—accounting for one third of total global cases. [9]Eight of the SADC countries are amongst those with the highest incidence of tuberculosis globally, and 75% of the SADC population is at risk of contracting malaria). However, projections indicate a declining rate of mortality from all communicable diseases up to 2030 as shown in the graphic below (Cilliers et al. 2011), though of course this may change in the light of emerging infectious diseases, such as COVID-19.

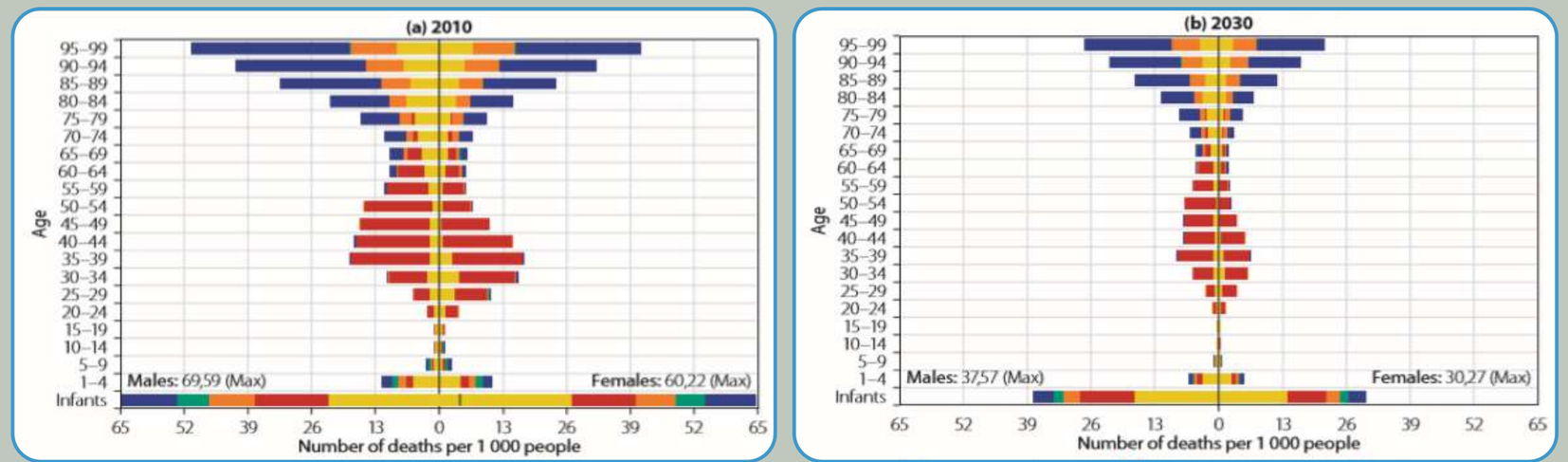


Figure 7. Communicable disease mortality by subtype for Southern Africa: 2010 and 2030 **Source:** Cilliers et al. 2011

The Southern African region is facing a growing "double burden" of poor nutrition, with obesity and associated health risks growing amongst several countries. One the main factors is poor diets—as discussed in the section on dietary transitions, as well as lack of physical activity. The graphic below from Nnyepi et al 2015 shows the distribution of risk factors for non-communicable diseases associated with diet and physical activity (PA) for 10 of the Southern African countries.

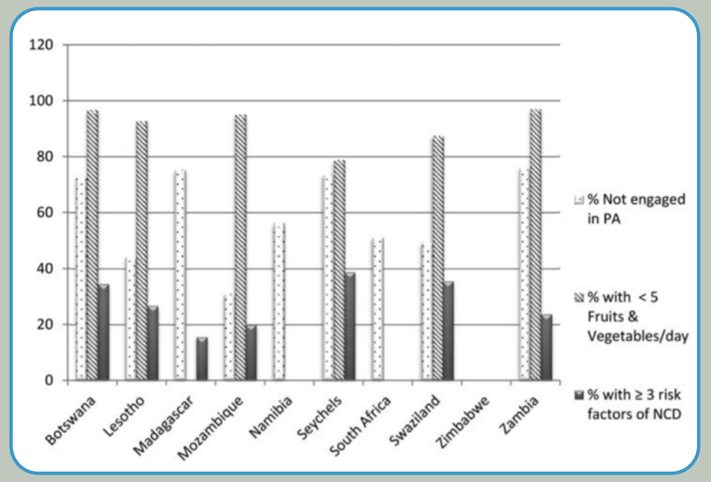


Figure 8. Prevalence of risk factors for non-communicable diseases in Southern African countries. **Source:** Nnyepi et al. 2015

[9] https://www.sadc.int/themes/health/communicable-diseases/ (Last accessed: 7 August 2020)

Poverty and inequality

High and increasing rates of extreme poverty characterize the Southern African region, associated with low economic growth and agricultural productivity, as well as very high rates of inequality and low scores on most social indicators.

Poverty is a large and persistent problem in the Southern African region as it is for all of Africa. Although poverty rates have declined over recent decades in Africa, the absolute number of poor people has increased (Badiane and Collins 2016). The Africa SDG 2019 report shows that for most Southern African countries meeting SDG1 on ending poverty remains a significant challenge.

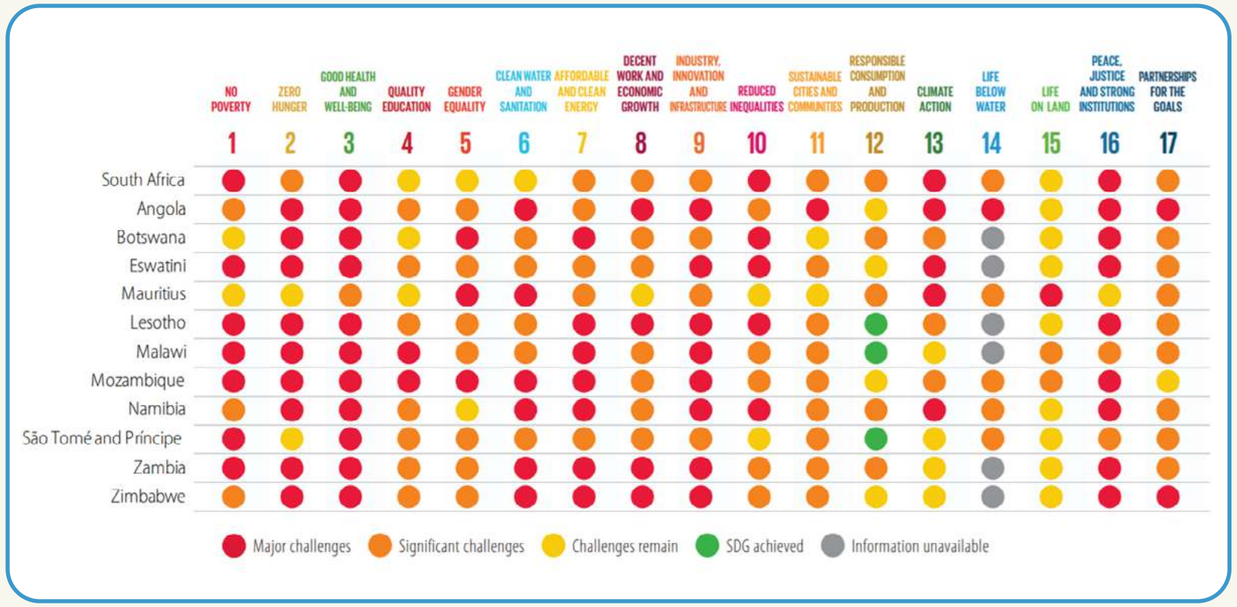


Figure 9. Southern Africa SDG Dashboard. **Source:** SDG Center for Africa and Sustainable Development Solutions Network 2019

According to the analysis in the Africa SDG 2019 report, while the Southern African region is not on track to meet any of the SDGs, there is moderate progress on 7 of the 15 goals and in no case is there a worsening of performance. The conclusion is that Southern Africa is performing better than any other region of sub-Saharan Africa (SDG Center for Africa and Sustainable Development Solutions Network 2019).

The Southern African region has a heavy burden of extreme poverty (measured as living on less than USD 1.90/day). It is estimated that nearly 88 million people (45% of the population) live in extreme poverty across the region. Southern Africa accounts for 9% of extreme poverty globally, even though it only accounts for about 2.5% of the world population (Porter 2017).

Poverty has a strong rural bias in sub-Saharan Africa as can be seen from the figure below from the IFAD 2016 Rural Development Report. The percentage headcount of people in extreme poverty is significantly higher in rural areas than urban ones, although a slight decline in the relationship is shown for East and Southern Africa over the period 1990-2010 (IFAD 2016).

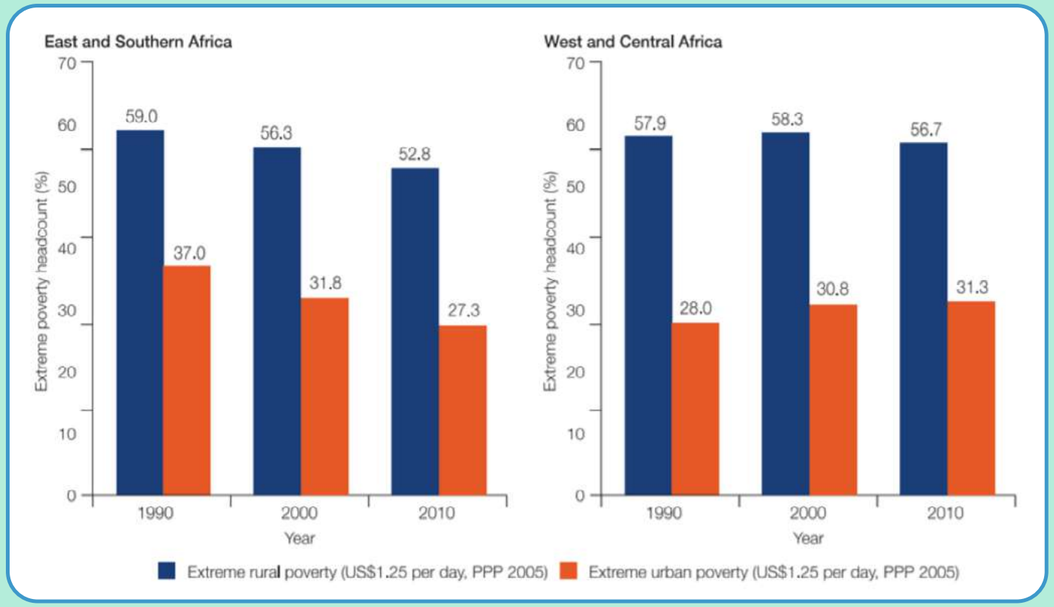


Figure 10. Trends in rural and urban poverty in East, Southern, West and Central Africa (1990-2010). **Source:** IFAD 2016

As with the overall trend in Africa, the Southern African region[10] is expected to see a drop in the percentage of the population living in extreme poverty from 45% in 2017 to 41% by 2040 (Porter 2017). However, the absolute numbers of people living in extreme poverty are expected to increase to nearly 130 million— an addition of 40 million people to those in extreme poverty in 2017 (see figure 11). The reason is high population growth, high inequality and slow growth in the agricultural sector which most poor people rely on for their livelihoods.

[10] Includes the 14 SADC countries shown in Figure 12

Photo: Roman nguyen-unsplash

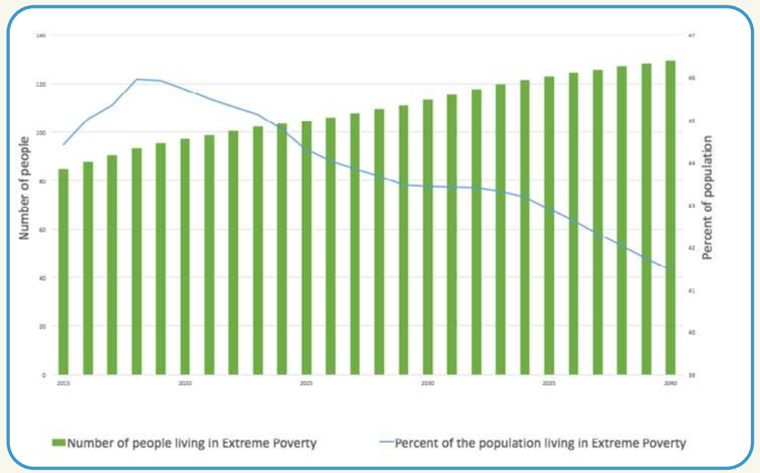


Figure 11. Extreme poverty forecast for Southern Africa (per cent of population and number of people), 2015 to 2040. **Source:** Porter 2017

Southern Africa has the highest level of inequality (as measured by the Gini coefficient) of any region in the world and with current trends the level of inequality is expected to increase slightly over time. These are pre-COVID estimates and thus are likely to be higher in the post COVID era.

According to Porter 2017, the projected increases in the number of poor is especially high in Madagascar, Malawi, Zimbabwe and Zambia. Mozambique, South Africa and Angola will still have high numbers of poor people but with relatively small increases over today's levels. The results of the ISS analysis are shown in the figure below.

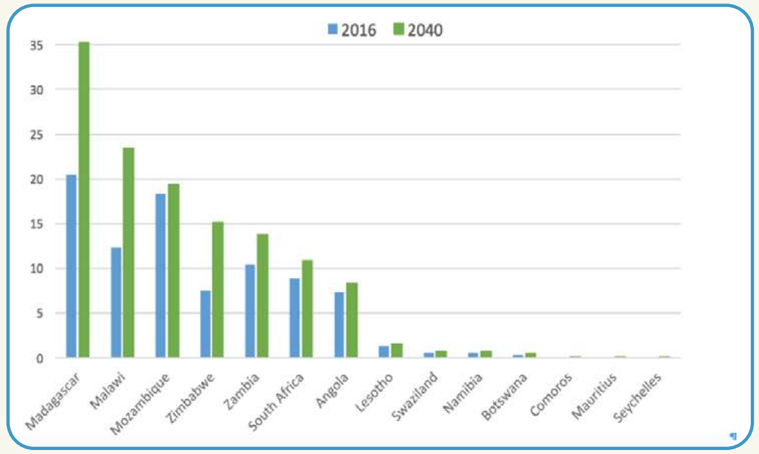


Figure 12. Extreme poverty forecast for Southern Africa (per cent of population and number of people), 2015 to 2040. **Source:** Porter 2017

The Southern African region has not experienced growth that is sufficiently inclusive or high to provide for improvements in livelihoods of the poor in the region. The region as a whole is expected to average 3.5% annual growth to 2040, which is lower than every other region on the continent except for Central Africa. Meanwhile, population growth is expected to average 2% over the same time period (Porter 2017). Note this estimate does not include the impacts of COVID-19 which can be expected to exacerbate poverty.

The Southern African region is one of the most unequal in terms of income and social indicators as indicated in the figure on the SDG Dashboard showing significant or major challenges in achieving SDG 10 on reducing inequality for all but 2 countries. The table below from the 2020 Southern Africa economic outlook report shows medium to high levels of inequality (e.g., high Gini coefficients) for 8 of the 14 Southern African countries included.

Level of Inequity	Gini Coefficient	Country
Very High Gini	>0.60	South Africa
High Gini	0.53-0.5999	Mozambique, Zambia, Namibia, Botswana
Medium Gini	0.45-0.529	Malawi, Eswatini, Lesotho
Low Gini	0.40-0.449	Madagascar, Angola, Zimbabwe
Very Low Gini	<0.399	Mauritius, Sao Tome and Principe

Table 1. Analysis of inequality by country. **Source:** AfDB 2020

Southern African countries score fairly low on the Human Development Index (HDI), with only two countries (Mauritius and Botswana) in the top 100. Eswatini has the highest growth in the HDI index from 2010 to 2018. Namibia and Lesotho are the only countries where the HDI index for women was higher than that of men. The picture of human development in the region shifts considerably however, when adjusted for inequality. Botswana, Namibia and South Africa have fairly high HDI scores, but also high levels of inequality, indicating that access to productive resources are limited to a minority (AfDB 2020).

	HDI			Inequality Adjusted HDI (IHDI)	HDI by gender	
Country	**2019 HDI**	**Rank**	**2010-19 growth rate(%)**	**2018 IHDI**	**Female**	**Male**
Mauritius	0.796	66	0.8	0.688	0.782	0.803
Botswana	0.728	94	1.2	-	0.723	0.731
South Africa	0.705	111	0.8	0.463	0.698	0.710
Namibia	0.645	130	1.2	0.417	0.647	0.641
Sao Tome & Principe	0.609	137	1.4	0.507	0.571	0.635
Eswatini	0.608	138	2.2	0.430	0.595	0.618
Zambia	0.591	143	1.4	0.394	0.575	0.606
Angola	0.574	149	1.5	0.392	0.546	0.605
Zimbabwe	0.563	150	0.9	0.435	0.540	0.584
Madagascar	0.521	162	0.4	0.386	0.504	0.533
Lesotho	0.518	164	1.5	0.350	0.522	0.509
Malawi	0.485	172	1.3	0.346	0.466	0.501
Mozambique	0.446	180	1.5	0.309	0.422	0.468
World	0.731	-	0.6	0.584	0.707	0.751
SSA	0.541	-	1.03	0.376	0.507	0.569

Table 2. Human Development Index, by gender, by country, 2018. **Source:** AfDB 2020


Photo: Neil Palmer (CIAT)

Land distribution

There is a growth trend in medium sized farms owned by urban and rural elites in countries. This could represent a potential source of wage income in the future. Overall, there is a high degree of fragmentation in agricultural land holdings and decreasing farm size for smallholders. There exist highly diverse systems of land tenure across Southern African countries but customary systems are important in all but one country. Tenure regimes that deny access to women are a problem throughout the region.

The proportion of farm sizes that are small or very small in sub-Saharan Africa is higher than in many regions of the world (see Figure 13). Around 80% of all nutrients come from farms that are <20ha in size.

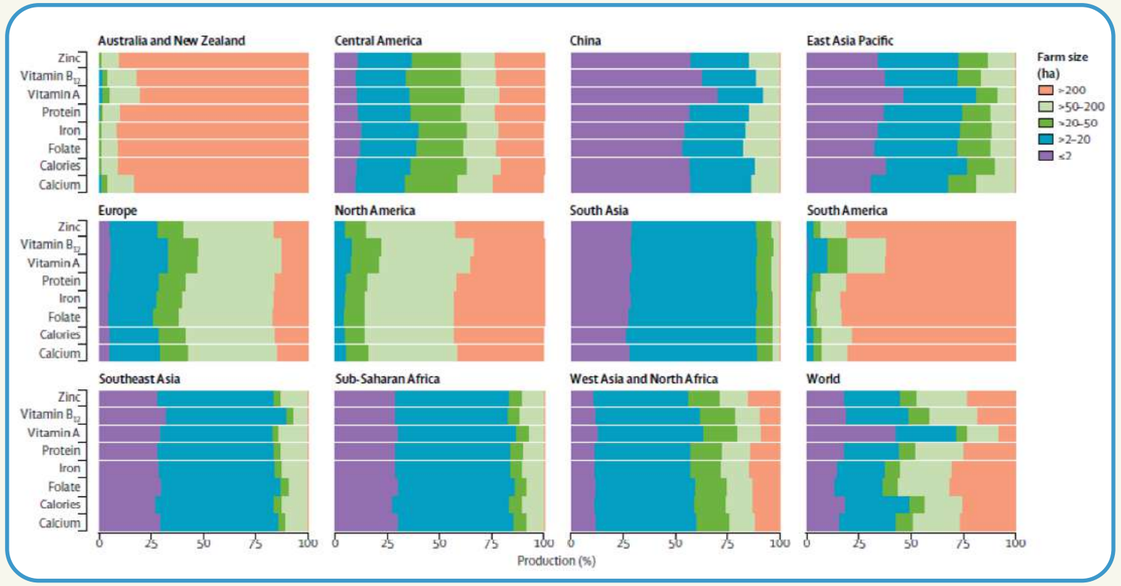


Figure 13. Global distribution of nutrient production by farm size. **Source:** Herrero et al. 2017

Farmland distribution patterns in sub-Saharan Africa are changing rapidly, with a significant increase in demand for agricultural land from international and national firms, as well as urban-based African investors (Jayne et al. 2017).

Rural population growth has also contributed to the increasing subdivision of land and fragmentation into tiny plots. Although farms of fewer than five hectares still account for about 90% of all farms in sub-Saharan Africa, the number of these farms is increasing only gradually in most African countries owing to land pressures, the economic unviability of further sub-dividing very small farms, and youth migration (Jayne et al. 2016). Conversely, the number of farms of 5-100 hectares (medium-scale farms) is rising rapidly. An increasing proportion of agricultural land is controlled by medium- and large-scale farms owned by urban-based Africans, who have acquired farmland using income earned from non-farm sources.

The displacement of small farmers to marginal production areas or out of agriculture due to large- and medium-sized land acquisitions is a major concern in rural areas of sub-Saharan Africa (Barbier and Hochard 2018). Land acquisition is done predominantly through negotiations with customary authorities who still hold title to much of the agricultural land, as well as through purchase, where it is legal (Sitko and Jayne 2014; Jayne et al. 2016). Recent analysis indicates that medium-scale farms of between 5-100 hectares control between 30% and 50% of total farmland in Ghana, Kenya, Malawi and Zambia (Jayne et al. 2016). Estimates from survey data in 6 sub-Saharan African countries indicates that urban households control between 25% and 35% of total agricultural land, and that these shares have risen rapidly in a short period (Jayne et al. 2016).

If current trends continue, we can expect that there will be fewer small-scale family farms and greater levels of wage employment on medium- and large-scale farms. We can expect that youth will face increased challenges in accessing land- particularly in areas of favourable access to markets (Jayne et al. 2017).

Southern African countries exhibit the same trends as those at the sub-Saharan African level, albeit with considerable differences between countries in terms of land tenure systems. Table 3 shows an increasing level of fragmentation of farm sizes for 11 Southern African countries from 1980 to 1990 (Moyo 2014).

Country	Arable land per cap (ha)				Cropland ha/cap	Ave farm size (ha)
	1980	1990	2000	2009	2009	2009
Angola	0.5	66	0.28	0.2	0.2	1.0
Botswana	1.5	1.06	0.70	0.1	0.1	0.5
Lesotho	0.2	0.18	0.12	0.2	0.2	1.0
Malawi	0.4	0.28	0.36	0.2	0.3	1.0
Mozambique	0.3	0.20	0.21	0.2	0.2	1.0
Namibia	-	-	-	0.4	0.4	2.0
South Africa	-	-	-	0.3	0.3	1.5
Swaziland	0.3	0.21	0.14	0.2	0.2	1.0
Tanzania	0.3	0.19	0.18	0.2	0.3	1.5
Zambia	0.9	0.62	0.21	0.3	0.3	1.5
Zimbabwe	0.4	0.29	-	0.3	0.3	1.5

Table 3. Per capita landholdings in Southern African countries. **Source:** Moyo 2014

In the Southern African region land is generally vested in the state, although often used by people under customary law (SADC 2010). Ongoing land policy development trends in the region give greater recognition to customary tenure systems. The history of colonial and racial discrimination in Southern Africa has left a deep mark on land issues in the region. Today, large-scale commercial farming is dominated by white elites and foreign landowners while small-scale farming is predominately black. Discrimination against women for land tenure is widespread (SADC 2010).

Land reform policies differ across the various Southern African countries. Countries such as South Africa, Zimbabwe and Mozambique have all taken somewhat unique approaches to land administration and land reform. South Africa predominantly provides for freehold and some communal land rights (mainly rural), whilst Zimbabwe provides a mixed system of freehold and leasehold land rights, and Mozambique is slowly transitioning from a predominantly leasehold system towards freehold land rights (PESA 2018).

In the Southern African region land reform progress has generally been slow, with poor implementation and high uncertainty about future developments. Problems have arisen from lack of adequate budget allocations, limited post-settlement support for the beneficiaries and smallholder farmers, and lack of technical support (PESA 2018). Consequently, large-scale commercial farming remains mostly owned by colonial settlers who monopolised large tracts of fertile and productive land, sometimes benefiting from state subsidies, and maintaining their competitive advantage over indigenous smallholder farmers (PESA 2018).

Analysis of the land ownership situation in Zambia from GCRF-AFRICAP's work indicates that trends similar to those found at sub-Saharan Africa level are occurring in the Southern African region. In Zambia, reforms to land ownership, through the Land Conversion of Titles Act 1975 and the Lands Act of 1995, paved the way for greater investment in agricultural land by both domestic and foreign investors. The country has seen large scale investments in sugarcane and soybean production supported by government investments in electrification and food processing infrastructure. However, acquisitions of large farms accounts for only 1.6% of Zambia's agricultural land. A recent study estimates that 50% of Zambian agricultural land is owned by medium-scale land owners, often wealthy and politically influential urban dwellers (Jayne et al. 2016). The country has a dual system of customary tenure and formal title registration, and there is much political controversy surrounding the relative powers of chiefs and the state to allocate and administer land. Recent attempts at limiting the autonomy of chiefs in land allocation through the new National Land Policy have met with resistance. At the same time, local land users are often found to be excluded from land acquisition processes (Nolte et al. 2014).

Madagascar has taken a different approach than others in the region. In 2005 the government of Madagascar launched a massive reform aimed at decentralizing land management and legally recognizing the property rights of "de facto" occupants. The stated objective was to "meet the massive demand for land tenure security, in a timely manner and at a cost appropriate to the economic context, by formalizing unwritten laws and upholding written laws." The Malagasy government expected to secure 500,000 plots with this approach. The program has been relatively slow in implementation, however. More than 31,000 property certificates were delivered in 2018 with a further 60,000 pending requests for property certificates expected to have been resolved by early 2019 (AFD 2019).

A summary of the types of land tenure in fifteen countries of Southern Africa is shown in the table on the following page.

Country	Area	Population[1]	Ownership (%of land)		
			Public	Private	Communal /Customary
Angola[2]	124,670,00	30,809,760	-	-	Approx. 85-90%
Botswana	58,200,000	2,254,130	25%	4%	71%
DRC[3]	226,700,000	84,068,090	-	-	Unknown
Eswatini (formally Swaziland)	1,736,400	1,136,190	19%	25%	56%
Lesotho	3,035,500	2,108,130	5%	5%	90%
Madagascar[3]	58,704,100	26,262,370	45%	15%	40%
Malawi	9,400,000	18,143,310	22%	12%	66%
Mauritius	204,000	1,265,300	-	80%	-
Mozambique	80,159,000	29,495,96	7%	-	93%
Namibia	82,400,000	2,448,260	20%	44%	36%
Seychelles[4]	45,000	96,760	Over 60%	-	-
South Africa	122,103,700	57,779,620	14%	72%	14%
Tanzania	94,508,700	56,318,350	15%	1.50%	84%
Zambia	75,261,400	17,351,820	30%	6% (Leasehold)	64%
Zimbabwe	39,100,000	14,439,020	16%	0.376	42%

[1] 2018 population estimates (World Bank)

[2] Land tenure in Angola and DRC are not known, as reliable data has not been collected and land reform to date has largely failed. For both countries, the majority of citizens are said to exist on land that has been passed down though families or falls under customary, local rules. For example, an estimated 85-90% of Angolans hold their land without any recognised rights under formal law. In both countries, technically, the government controls majority of land. In the case of Angola, Cain (2013) notes that legislators have historically and in the present demonstrated a tendency to contain or circumscribe the land rights of the country's rural and poor peri-urban populations.

[3] Madagascar went through land reform in 2005, with the goal of converting most land to titled private property, including communally managed lands. However, only 10-15% is estimated to have successfully been titled in subsequent years.

[4] Actual percentage no available, but at least 60% of land is protected for environmental reasons according to FAO.

Source: Amended from SADC (2010)

Table 4. Types of land tenure in Southern Africa. **Source:** Ransom et al. 2019

Photo: Neil Palmer (CIAT)

Gender issues

Gender inequality with women having less political, social and economic power than men has been, and continues to be, a major problem in the region, however, some improvements have been achieved with participation in political representation and schooling for females.

According to the 2019 SDG Gender Index, sub-Saharan Africa has an average regional index score of 51.1—the lowest scoring region globally in terms of gender equality (SADC 2019a).

The Southern African region exhibits several aspects of gender disparities in terms of political, social, economic and health status. These include lower schooling rates for females particularly in rural areas and early age of pregnancy and marriage, maternal mortality rates and prevalence of HIV infections. For example:

- **Gender inequality exists in almost all spheres of life in Eswatini:** socially, women are regarded as minors; decision-making power is vested in males at family, community and national levels; men take decision on matters relating to sexuality, reproduction, family size, and the adoption of fertility regulation measures (SADC 2013a).
- **Information on status and trends regarding gender issues in Botswana, Mozambique, Tanzania and South Africa are scant;** however, in Botswana, the customary law and practice have been observed as inhibiting the success of efforts (including government policies, legal instruments and programs) to eliminate gender discrimination by continuing the perpetuation of unequal power relations between men and women (SADC 2013a).

However, many Southern African countries have taken the implementation of the SADC Declaration on Gender and Development (1997) and its addendum on the Prevention and Eradication of Violence Against Women and Children (1998), and the achievement of the Millenium Development Goal (MDG) targets related to gender seriously in their planning and implementation strategies, particularly primary school enrolment.

Representation of women in the decision-making spheres of governance has been on the increase in almost all countries in SADC region, and the most recent data show that South Africa is a leader in this, with about 45% of women representatives in the Parliament, followed by Mozambique (39%), Angola (38.6%) and Tanzania (36%) (SADC 2013a).

Photo: Doug Linstedt-[illegible]

Education and skills development

Southern Africa has made significant progress in achieving universal access to primary school education with over 80% of school-aged children enrolled. This is significantly higher than the sub-Saharan African average of 70% (AfDB 2020). However, drop-out rates are over 10% in most countries. Secondary and tertiary school enrolment levels are low; at 50% in lower secondary, 30% in upper secondary and under 15% in tertiary for most countries. The figure below shows the distribution of tertiary school enrolment of Southern African countries by gender for 2017. Overall the rates of enrolment are quite low, however, in several countries (Angola, Madagascar, Malawi, Mozambique, Sao Tome and Principe, Zambia and Zimbabwe) female enrolment is equal or higher than male enrolment.

Most Southern African countries are expected to have a significant increase in the workforce, however, there is skills gap of the future workforce in meeting employment demands. Southern Africa has very poor scores on the Human Capital Index (HCI) which measures levels of health and education as shown in the figure below. The index ranges from 0 to 1 where 1 indicates maximum potential being met. All countries except Mauritius have a score below .5. Angola, Lesotho, Madagascar and Mozambique score under .4. The HCI is calculated for 157 countries, and as can be seen in the figure the Southern African countries are amongst the lowest ranked.

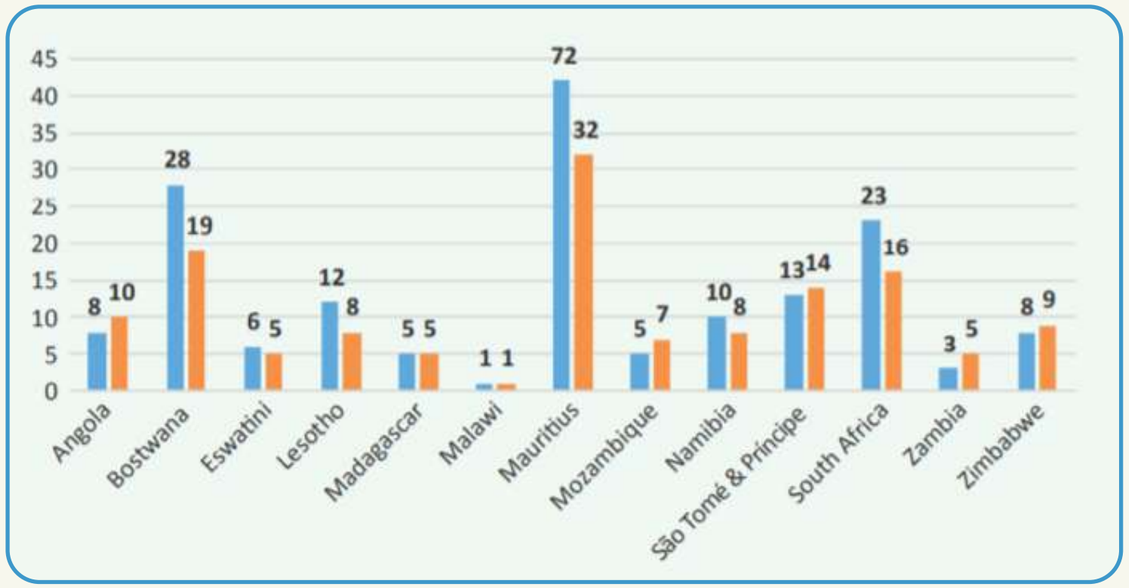


Figure 14. Tertiary school enrolment in Southern Africa, 2017. **Source:** AfDB 2020

Figure 15. Human Capital Index in Southern Africa, 2018. **Source:** AfDB 2020

TECHNOLOGY TRENDS

Energy sources and distribution

Low access to energy in rural areas and planned expansion of energy is mostly aimed at industrialization and urban areas. Demand is projected to grow rapidly up to 2050 with potential for major expansion in renewable sources.

Energy is a critical area of the infrastructure pillar of the revised SADC Regional Indicative Strategic Development Plan (RISDP) and considerable preparatory work has been done in this area to develop enabling policies, systems and processes that will greatly facilitate project preparation as well as help to attract private sector investments and further promote public-private partnerships.

Regional integration of Southern African energy sources has been taking place over recent years. To date, nine power utilities on the Southern African mainland are interconnected, except Angola, Malawi and Tanzania. Some degree of integration of power networks involving Botswana, DRC, Eswatini, Lesotho, Malawi, Mozambique, South Africa, Zimbabwe and Zambia has been accomplished. This inter-connectivity has facilitated the establishment of the Southern African Power Pool (SAPP) trading platform, enabling SADC Member States with power shortfalls to purchase power from those with surplus power within the framework of the regional energy security framework.

At present, the Southern African Power Pool (SAPP) is largely dominated by non-renewable energy in the form of coal. However, more recently, the growth of energy from renewable sources is increasing. When taking into account the commissioned capacity, hydropower in the form of conventional and pumped storage accounted for 43%, gas for 24%, solar systems (Photovoltaics and Concentrated Solar Power) for 11%, wind for 10% and coal occupied only 7% (SADC and SARDC 2018).

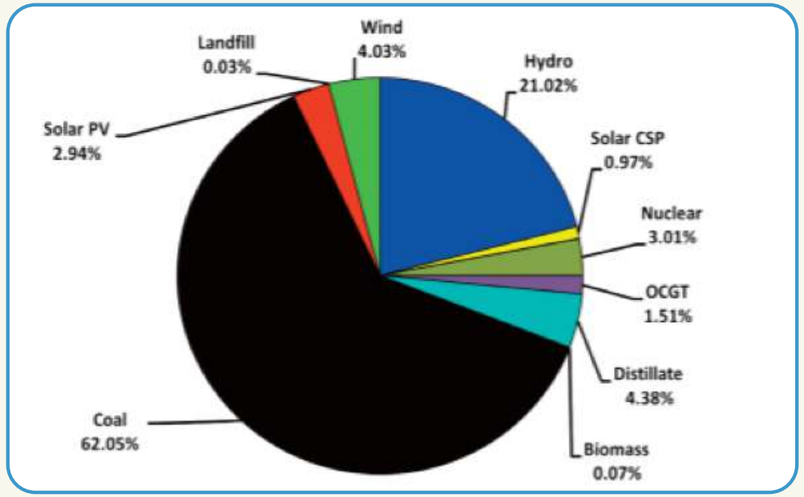


Figure 16. SAPP Installed Generation Mix (2017). **Source:** SADC and SARDC 2018

The energy mix may, however, change more rapidly than expected, due to the rapid decline in prices of renewable energy systems (see figure below). Solar power (and to a lesser extent onshore wind) are essential on par with the costs of hydro-power, and increasingly cheaper than any fossil fuel form of electricity generation.

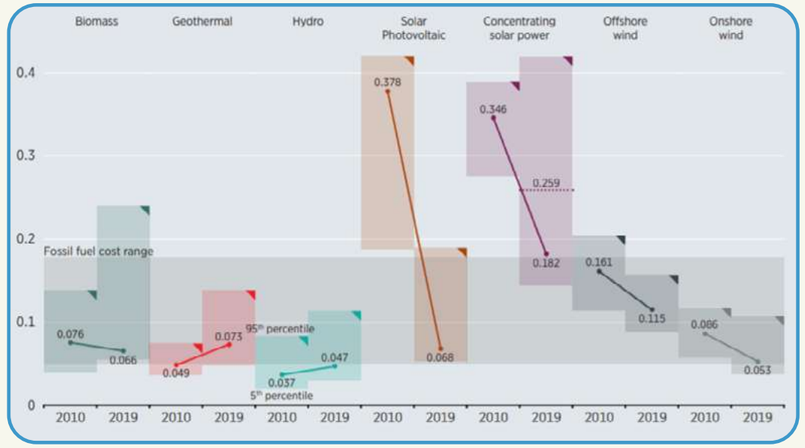


Figure 17. Global weighted average levelized cost of electricity from utility-scale renewable power generation technologies, 2010 and 2019. **Source:** IRENA 2020

Given climate change's impacts on water supply, the balance in terms of favouring new Photovoltaics (PV) installations vs. hydro, may flip; and if PV costs continue to decrease, the potential for rural energy supplies will increase rapidly.

Access to energy in the Southern African region is still highly constrained, particularly in rural areas with average access to electricity for only 34% of the population.

Energy demand is projected to grow rapidly to 2050. Much of the demand comes from expected growth in the industrial sector and rising shares of medium and advanced technologies therein. However, under current policy frameworks, rural areas are not likely to see a major increase in energy access (SADC and SARDC 2018).

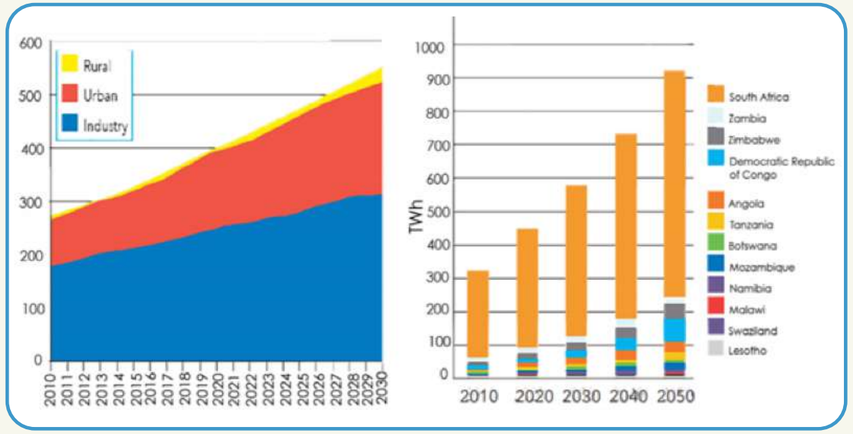


Figure 18. Energy demand projections by country and category. **Source:** SADC and SADC 2018

SADC is planning a significant increase in the uptake of renewables that will allow the region to achieve a renewable energy mix of at least 32% by 2020, which should rise to 35% by 2030. Most of this capacity will come from hydropower, followed by wind energy, solar PV, concentrated solar power and biomass. Development of a harmonized regional policy framework for new and renewable energy has been identified as an important step towards realization of SADC's goal of achieving the balance between meeting the region's energy needs and ensuring sustainability of the environment (SADC and SARDC 2018).

Agricultural technology

The level of investment in agricultural research and development is quite low for the Southern African region, and this is one of the main justifications for the World Bank-funded Agricultural Productivity Program for Southern Africa program (APPSA) implemented in Malawi, Mozambique and Zambia (World Bank 2013). The project appraisal report cites work by the ASTI program indicating low levels as well as highly fragmented investments in agricultural research and development (World Bank 2013). In 2012, SADC established the Centre for Coordination of Agricultural Research and Development for Southern Africa (CCARDESA).

CCARDESA coordinated the implementation of the APPSA project and recently published a report on the technologies, innovations and management practices which were disseminated under the project through Regional Centres of Leadership. Many of the technologies were already available (on the shelf) but with dissemination and adoption rates quite low. These included improved crop varieties for maize, sorghum, legumes and improved soil management techniques.

There are significant differences in technology use patterns between smallholder and medium- to large-scale commercial farmers in technology use in Southern African agriculture. Several studies from Southern African countries indicate very low levels of improved technology adoption amongst smallholder farmers (Arslan et al. 2015; Arslan et al. 2016; Arslan et al. 2017; Asfaw et al. 2016).

ECONOMIC TRENDS

Southern Africa has had lower growth rates than other African regions over the last two years, although GDP per capita is the highest. Services are the highest contributor to the region's GDP. The contribution of the agricultural sector to GDP is generally quite low across all Southern African countries, but its share in employment is generally highest amongst sectors. Youth unemployment is a significant problem across Southern African countries. Food prices have increased in the region as have food imports despite expansion of food production in the region.

Economic growth

In 2018 and 2019, the Southern African region had the lowest growth rate amongst African regions. This was after having the highest rate of growth during the 2010-2017 period. Factors contributing to the poor growth were depressed global demand, supply side constraints, falling commodity prices and extreme weather patterns of drought and cyclones (AfDB 2020).

Prior to the COVID-19 pandemic the expectations were moderate growth for 2020 and 2021, however, these are now significantly reduced. Projections shown in the figure below from the Southern African Economic Outlook Report of 2020 indicate economic recovery only in 2021 with a level of growth higher than advanced economies.

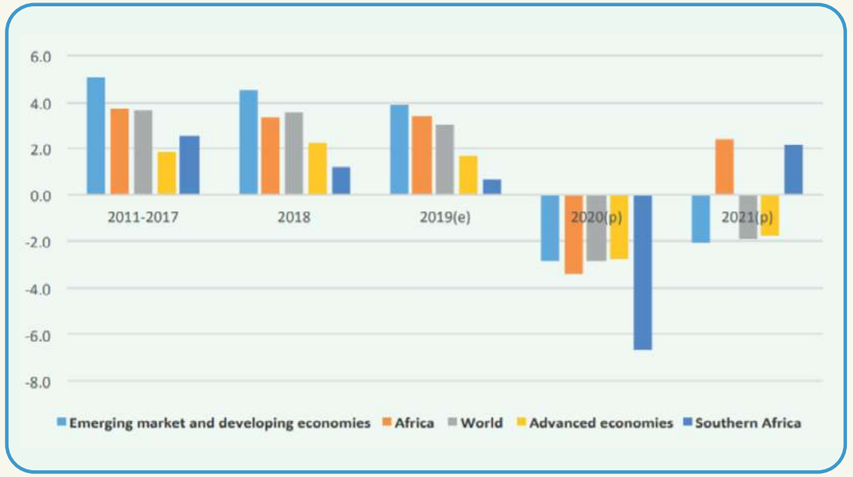


Figure 19. Real GDP growth rate comparisons between different world regions, 2011-2021 (%). **Source:** AfDB 2020

Services dominate the region's economy, accounting for over 50% of GDP for most countries. Industry is the second largest sector in most countries, with only Madagascar, Malawi and Mozambique having the agriculture sector as the second largest contributor to GDP. South Africa is the largest economy, followed by Angola, Zambia and Botswana.

Despite prioritisation of industrialisation development in the Regional Indicative Strategic Development Plan (RISDP), progress has been slow. An unfavourable policy environment, low public and private sector into value chains and unstable power generation capacity have all contributed to reducing the region's competitiveness and economic growth (AfDB 2020).

A striking feature of Southern African economies is the high share of employment in the agricultural sector, despite the low share of the sector in contributing to GDP in seven of the region's countries (see table below). The service sector is both a significant contributor to GDP and a source of employment.

Country	Agriculture		Industry		Services	
	Employ-ment	GDP	Employ-ment	GDP	Employ-ment	GDP
Angola	49	9.2	8	44.4	43	46.4
Botswana	23	2.3	18	34.4	59	63.8
Eswatini	13	9.5	24	37.3	63	53.3
Lesotho	67	6.2	10	34.8	23	59.1
Madagascar	68	28.5	7	20.2	25	51.3
Malawi	72	30.4	8	15.3	20	54.3
Mauritius	7	3.5	27	21	66	75.5
Mozambique	71	24.7	8	22.7	21	52.6
Namibia	20	7.1	19	31.3	61	61.6
Sao Tome & Principe	23	12.3	18	16.4	59	71
South Africa	5	2.5	23	29.3	72	68.2
Zambia	54	5.2	11	37.3	36	57.5
Zimbabwe	67	9.2	7	25.1	25	62.7

Table 5. Sectoral employment (%) versus sectoral GDP contributions (%), 2019. **Source:** AfDB 2020

Photo: Miguel Castellano-unsplash

Employment

The region is expected to have a major increase in the workforce due to a demographic youth bulge. Presently, the highest rates of employment are in informal economy with low returns. Agriculture is the sector with the highest employment shares in most countries.

The Southern African region has the highest levels of unemployment in Africa, with youth unemployment in double digits for most countries (AfDB 2020).

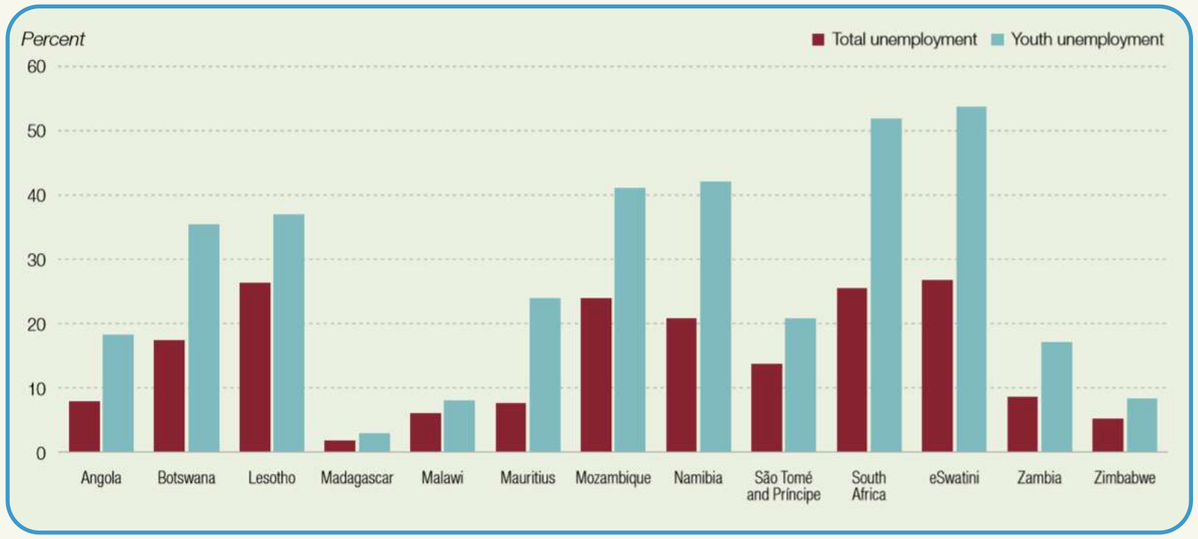


Figure 20. Unemployment by country in Southern Africa, 2010-2018). **Source:** AfDB 2019

As shown in figure 21 from the IFAD 2019 Rural Development Report, rural youth populations in sub-Saharan Africa are projected to increase in regions and countries with low rates of structural and rural transformation (measured by the share of GDP from non-agricultural activities, and value added per agricultural worker, respectively). However, three countries in the Southern African region, namely, South Africa, Eswatini and Namibia, are the only sub-Saharan African countries that have achieved high levels of both structural and rural transformation.

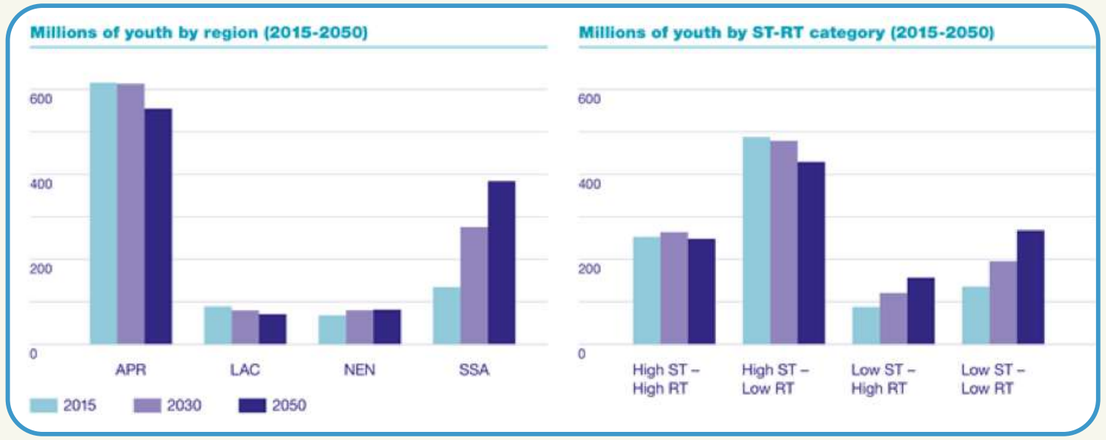


Figure 21. Number of youth by region, and by structural transformation-rural transformation. **Source:** IFAD 2019

institutions and low labour absorption capacity in industries. Essentially, there has not been sufficient importance given to employment growth in development policies. High unemployment rates are an important factor in the region's huge income inequalities.

The COVID-19 pandemic is likely to exacerbate unemployment in the hardest hit sectors such as tourism and hospitality, entertainment, retail and trade, and agriculture, where most of the people in the region are employed. The small and medium enterprises (SMEs) and the informal economy in general, which are big employers in some of the regional countries, will also be adversely affected due to the national lockdowns and slowdown in business activity. Without government support, the majority of workers are at risk of losing jobs, thus, compounding the unemployment statistics (AfDB 2020).

Food prices

Food prices have increased in recent years and are expected to continue to do so. Even though food production in the Southern African region has expanded significantly, food imports have also increased. High levels of food price volatility can be expected as production faces increasing risks from climate change.

Food demand in sub-Saharan Africa is increasing rapidly, driven by population and income growth. Domestic production has not been sufficient to meet this increased demand, and thus an increasing share of food is supplied through imports. Sub-Saharan Africa's food import bill increased seven-fold between 2001-2014—from USD 6 billion to USD 45 billion (Jayne et al. 2017).

In sub-Saharan Africa, the ratio of the value of food imports as a percentage of the value of domestic agricultural output has been steadily rising since 2000, from 9.2% in 2001 to 24.1% in 2014 (see figure below). The greatest share of sub-Saharan Africa's total food imports is coming from countries outside the region. Food grain and oilseed imports (for animal feed) are driving rising food deficits, accounting for roughly 60% of the region's total food import bill (FAOSTAT 2017). These patterns reflect the region's inability to increase local food production fast enough over the past three decades to keep up with its rapidly growing population as well as the rising income-related growth in food demand.

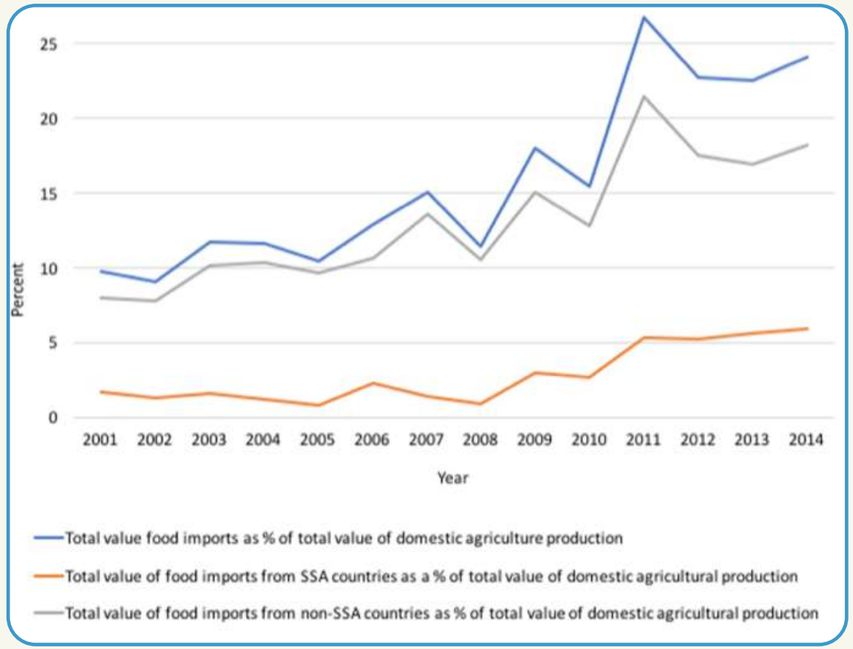


Figure 22. Value of food imports as a percentage of the value of domestic agricultural production in sub-Saharan Africa. **Source:** Jayne et al. 2017

[11] Data downloaded: 31 July 2020

Food prices in the Southern African region have risen over recent years, as exhibited in the graph below showing changes in the Consumer Food Price Index from 2011 to 2019 for five countries in the region. The index is close to doubling over the period.

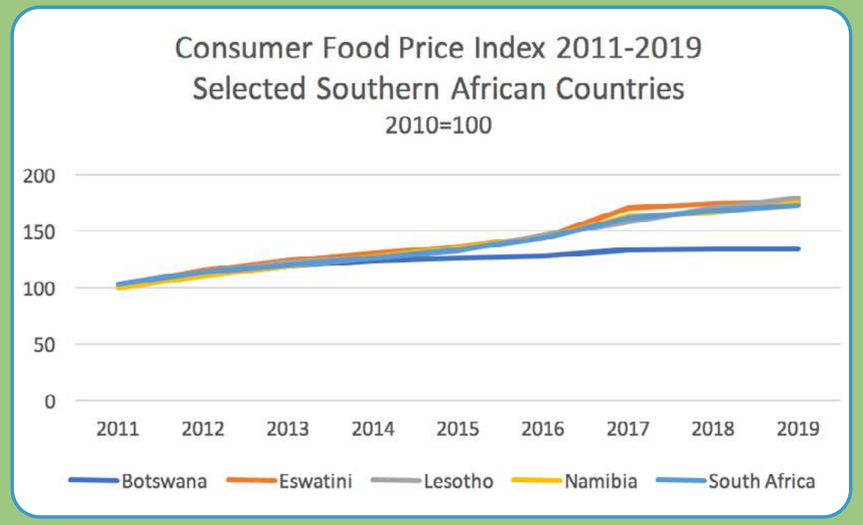


Figure 23. Consumer Food Price Index, 2011-2019. **Source:** FAOSTAT[11]

The regional level of food price volatility in SADC is considerably higher than that of any one country in the region—with the exception of Mauritius. Food price volatility is only weakly correlated between the SADC countries. These two conditions indicate high potential for reducing food price volatility through intra-regional trade. At present, SADC has the highest share of regional trade amongst the African regional economic communities (RECs) at 42%, compared with 6% for the Economic Community of West African States (ECOWAS) and 20% for the Common Market for Eastern and Southern Africa (COMESA). Although SADC is doing much better than the other two RECs, its member countries still account for far less than half of the value of agricultural trade within the region (Badiane et al. 2014).

Photo: Thomas Le-unsplash

Trade

The SADC region has experienced ups and downs in exports to world markets. The value of SADC exports rose from just under USD 50 billion in 2000 to USD 225 billion 2011, but then declined to USD 168 billion in 2017 with the collapse in commodity prices. Trends in the share of SADC in world exports followed a similar pattern, rising from 0.8% in 2000 to 1.2% in 2011 and then declining to 1% in 2017 (Black et al. 2019).

Intra-regional trade in SADC has increased over the 2000-2017 period. Intra-SADC export shares exceed 30% for Lesotho, Malawi, Namibia, Eswatini (94% in 2017), DRC and Zimbabwe. In contrast, Angola, Comoros, Seychelles and Madagascar export less than 10% of their goods to the SADC region (Black et al. 2019). Fewer countries experienced rising shares of imports from intra-SADC trade over the same period, however. South Africa is both the major source of intra-regional exports as well as the primary market for other SADC country exports.

There is a significantly higher share of manufactured goods being exported at the intra-regional level, compared with the extra-regional exports as shown in the figure below. This indicates considerable potential for enhancing industrial development through intra-regional trade (Black et al. 2019).

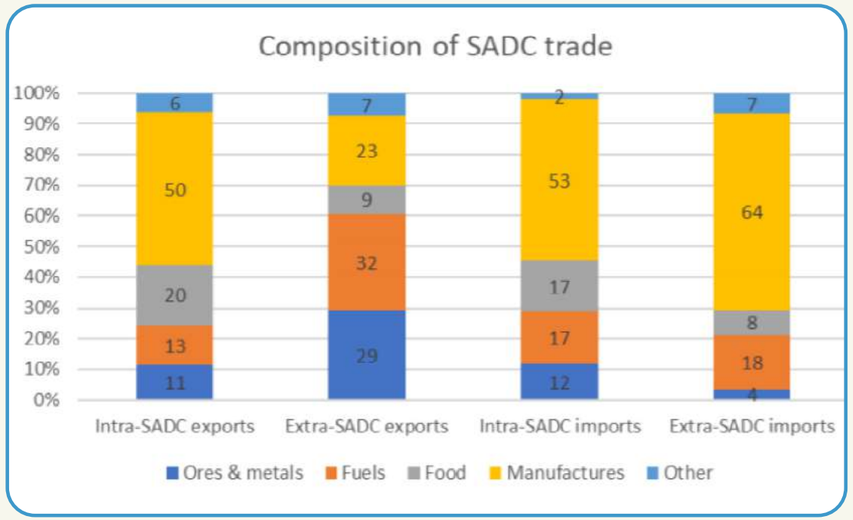


Figure 24. Composition of intra- and extra-SADC trade in goods, 2015 (%). **Source:** Black et al. 2019

The SADC region is typically an exporter of unprocessed but perishable agricultural products which has remained fairly constant over the period of 2010-2017. Until 2012 it was also a major importer of processed agricultural products but since then there has been a major reduction in the share of processed food imports. The real net import value of processed products in 2017 was less than a third of that in 2012 (Meyers at al. 2019).

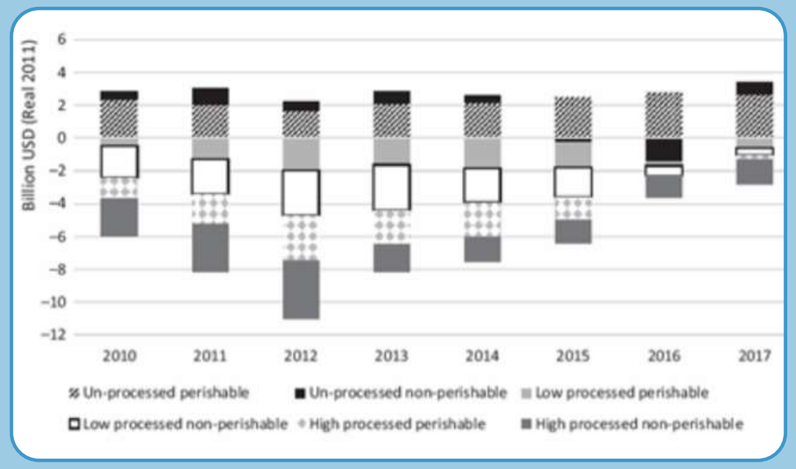


Figure 25. Net trade in agricultural products for the SADC region. **Source:** Meyers et al. 2019

The SADC region continues to import significant amounts of products for which it lacks comparative advantage or competitiveness such as wheat and rice, and chicken meat. The graph below categorizes all agricultural imports and exports for the SADC region into 15 categories and tracks their levels over the 2010-2017 period.

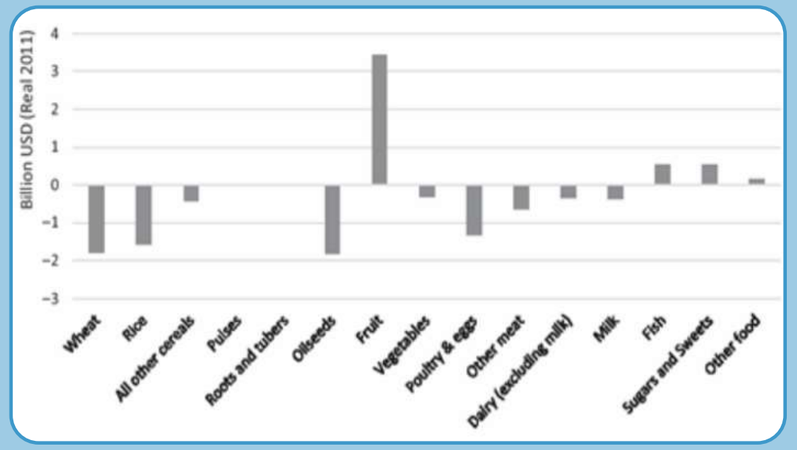


Figure 26. Average net trade position of all agricultural products in the SADC region, 2010-2017. **Source:** Meyers et al. 2019

The likelihood that these historical trends will continue into the future depends on the development of global markets, which, in turn, rests on the stability of world order and market demand for today's commodities. As discussed above, market dynamics may change if dietary preferences shift (driven by health and sustainability concerns), and if geopolitical and trade instability increases, the costs and benefits to trade will change. These issues are further discussed in the Scenarios sections in the following pages.

Photo: Mahdiar Mahmoodi-unsplash

ECOLOGICAL AND NATURAL RESOURCE MANAGEMENT TRENDS

Land degradation is a major problem throughout the Southern African region contributing to low agricultural productivity. Water scarcity is an urgent issue in the southern countries of the region, but not the north. Generally, water use efficiency is greater in the south than the north, however, levels of interbasin transfers are not common.

Land degradation

Land degradation is widespread in sub-Saharan Africa. A report by the Montpellier Panel published in 2014 indicates that around 65% of arable land in sub-Saharan Africa is already degraded, which is costing more than 180 million smallholder farmers around USD 68 million in lost income annually (Montpellier Panel 2014). Poor soil quality tends to depress the effects of conventional inorganic fertilizers and realizing the benefits of improved plant varieties (Jayne et al. 2017).

A map of hotspots of land degradation using biomass productivity indicates considerable degradation in the Southern African region.

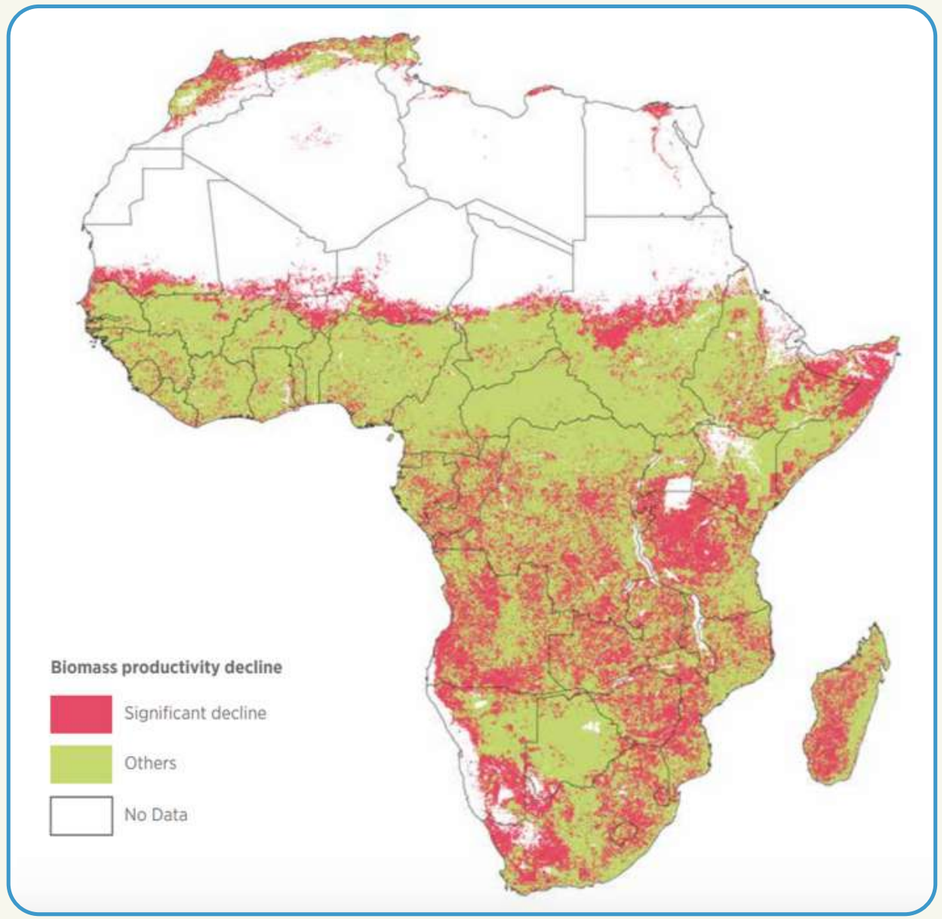


Figure 27. Biomass based mapping of land degradation hotspots. **Source:** Montpelier Panel 2014 based on Le QB, Nkonya E, Mirzabaev A. 2014. Biomass Productivity-Based Mapping of Global Land Degradation Hotspots. ZEF-Discussion Papers on Development Policy. Bonn: Center for Development Research (ZEF).

Addressing the issue of land degradation is fundamental to achieving resilient agricultural livelihoods in Southern Africa. Land degradation is associated with poverty, given the importance of agriculture in the livelihoods of Africa's poor (Barrett and Bevis 2015). It also raises the importance of the distribution of especially fertile land and the insecurity of land rights in a number of countries in Southern and Eastern Africa as well as the imperfect functioning of Africa's land markets (Barrett et al. 2017).

In Southern Africa, increasing population pressures leading to reduction in fallows and continuous cropping without inputs has resulted in soils depleted of nutrients. Soil fertility decline has led to declines in crop yields in the region (Vlek et al. 2019).

In the Southern African region soils are generally of poor quality with low organic content and low water retention (Vlek et al. 2019).

- In most of Namibia and Botswana and the northwestern part of South Africa the soils are sandy, with low soil organic matter.
- In Lesotho over 70% of the soils are acidic, have low organic matter, low pH and are infertile.
- In South Africa over 30% of the soils are sandy and over 60% are low in soil organic matter, and exhibit high levels of degradation and low productivity.
- In Malawi soil erosion is a major cause of low productivity with an estimated loss of 20 kg of N and 30 kg of P annually.
- Mozambique is estimated to lose 112 kg of N, 60 kg P203 and 116 kg of K20 annually.

Water scarcity

Water availability in Southern Africa is variable both in time and spatially wherein some parts of the region are experiencing scarcity and other parts abundance. The region is characterized by a wetter north and drier south, demarcated by the 860mm/a isohyet (the red line in the figure below) (CRIDF 2014).

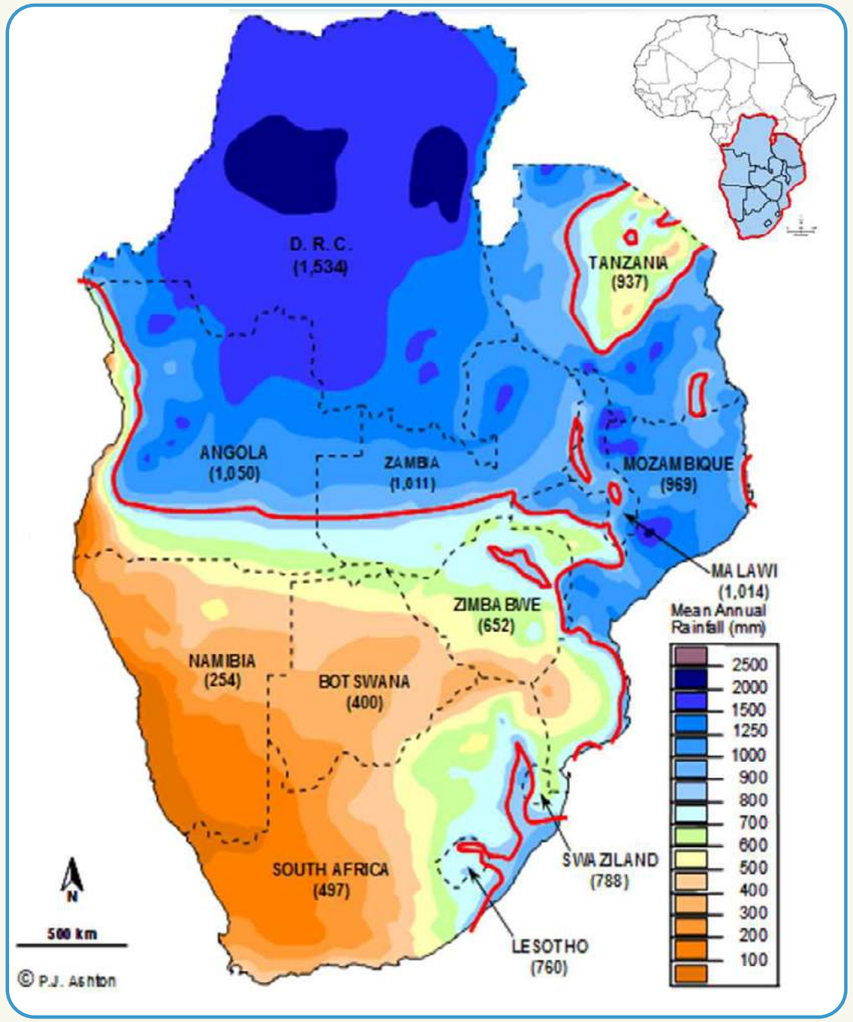


Figure 28. Rainfall across mainland SADC, showing 860mm/a isohyet. The figure in the brackets is the country average rainfall in mm. **Source:** CRIDF 2014


Photo: Inge Maria-unsplash

Water scarcity is a reality and a growing concern in several parts of the Southern African region. Population growth and associated demands for domestic, agricultural, and industrial use are increasing stress on limited water resources. In addition, rainfall patterns are changing with climate change, and some areas are likely to experience increased water shortages. Water use in the SADC Member States varies widely and a majority of the region's approximately 200 million people lack access to basic safe water (SADC 2013a).

Blue water availability varies significantly across the region from over 8000 m3/cap/yr in the DRC to 869 m3/cap/yr in South Africa (CRIDF 2014). This is due not only to rainfall and runoff but also population dependency on the resource. The most stressed countries are not those with the lowest rainfall but those with high water demand relative to rainfall such as Eswatini with huge water withdrawals for irrigating sugarcane. South Africa stands out as the most water stressed—and also most vulnerable to climate change (CRIDF 2014).

At present, in Southern Africa, [12]about 85% of surface and groundwater is used for agriculture (Vlek et al. 2019). The share of irrigated land is less than 20% and primarily in South Africa.

Botswana and South Africa are the largest importers of virtual water, with 45 and 21% of their water footprint imported respectively (CRIDF 2014).

There are three pivotal water basins in the SADC region: the Incomati, Limpopo and Orang/Senqu (CRIDF 2014). Management of these across SADC is a key requirement for the region to achieve its development goals. However, this is proving complicated as discussed in the section on water management policy below.

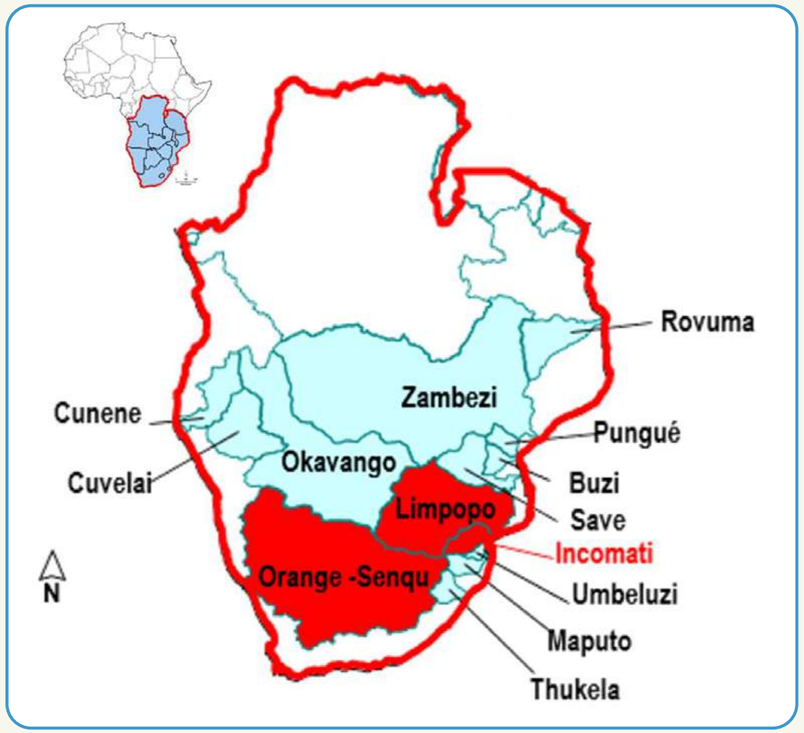


Figure 29. Three basins in the SADC region. **Source:** CRIDF 2014

Real water exports, such as interbasin transfers between the regions, are not common, with the most significant occurring between Lesotho and South Africa. The latter has invested heavily in dam infrastructure in the former to supply the densely populated and highly industrialized Gauteng province of South Africa. This has been to the detriment of local small-scale farmers in Lesotho for whom the inundated land is no longer accessible (Johnston and Chapman 2016).

[12] Includes Botswana, Lesotho, Malawi, Mozambique, Namibia, South Africa, Swaziland, Zambia and Zimbabwe

POLITICAL

The Southern African region is one of the most stable politically in Africa, albeit cases of political strife and even armed conflict have occurred in the region. The level of regional integration is complicated by the overwhelming strength of the South African economy compared with other countries in the SADC community.

The weakest aspect of regional integration is in infrastructural integration (including water management and electricity). Successful coordination in managing water is essential to achieving SADC's development goals but has not yet been attained.

According to African Development Bank, the Southern African region is the most stable region in Africa, being largely peaceful. However, there have been instances of political crises, democracy and governance deficits, and even armed conflict. Lesotho had political instability and a security crisis in 2015 and 2017. Angola had a new president in 2017 after 38 years, and Zimbabwe in 2018 after 37 years. South Africa witnessed changes in political leadership likely to boost investor confidence. Botswana continues to rank as a peaceful country on the global peace index, remaining in second place in Africa after Mauritius.

The level of regional integration is a key indicator of governance. Regional integration has historically constituted an integral part of development strategies in Africa. It has been viewed as a means to achieve sustained economic growth and development and to overcome the region's structural problems such as political fragmentation, lower per capita incomes and small intra-regional markets.

In a joint effort by the African Union, the African Development Bank and the UN Economic Commission for Africa, analysis of the level of regional integration is conducted using sixteen different indicators, grouped into five dimensions. The dimensions and associated indicators are shown in the figure on the right.

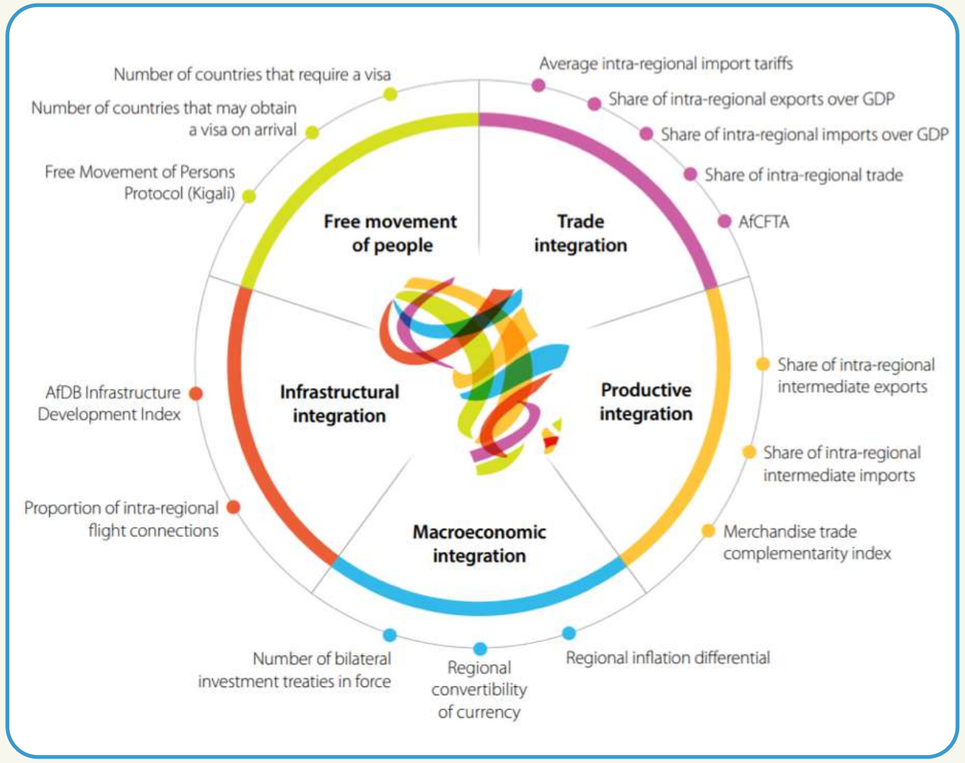
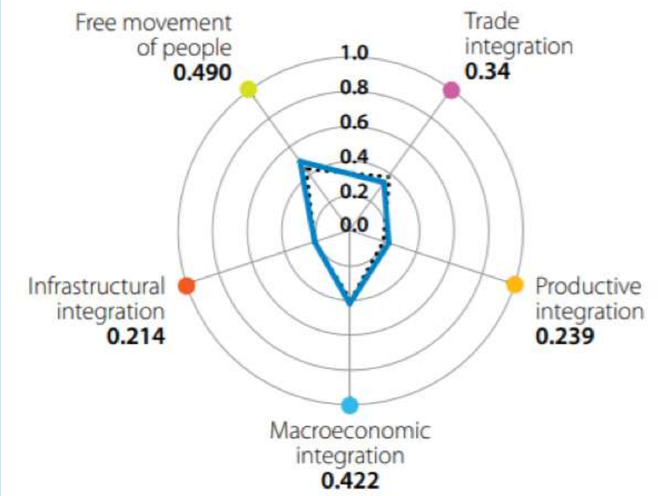


Figure 30. The dimensions and indicators of regional integration. **Source:** AU, AfDB, UNECA 2019

Assessing the level of integration across the continent's regional economic communities indicated that the lowest points for overall integration are scored by SADC at 0.337 and the highest score overall is obtained by the East African Community (EAC) at 0.537.

County level analysis indicates that SADC's top performers are South Africa, Mozambique and Zimbabwe; its bottom performers are the DRC, Angola and Eswatini. SADC's country rankings appear to reflect the current state of socioeconomic integration in the community, where the best-performing countries have flourishing economies and enjoy a relatively good standard of living. SADC's strength lies in the free movement of people, and is weakest on infrastructural integration.

Average score	0.337
Strongest dimension	Free movement of people
Weakest dimension	Infrastructural integration



Dotted line represents Africa's scores.

Figure 31. SADC's scores on the five dimensions of regional integration. **Source:** AU, AfDB, UNECA 2019

Intra-regional levels of global power

Intra-regional cooperation is affected by the relative levels of power in the SADC Member States. One measure of global power has been developed by the International Futures (Ifs) forecasting tool. This tool calculates each country's portion of global power by weighting its share of global GDP (at exchange rates or purchasing power parity), population, a measure of technological sophistication (with GDP per capita as a proxy), government size, conventional military power and nuclear military power (Hughes 2014).

A study by the ISS using this tool to compare projections of power among SADC countries showed that by 2040 Angola will be the only country that approaches South Africa, but that the latter will still wield more power potential. The only other country in SADC that will come close to these two heavyweights is Tanzania, largely because of rapid population growth (Louw-Vadren 2018).

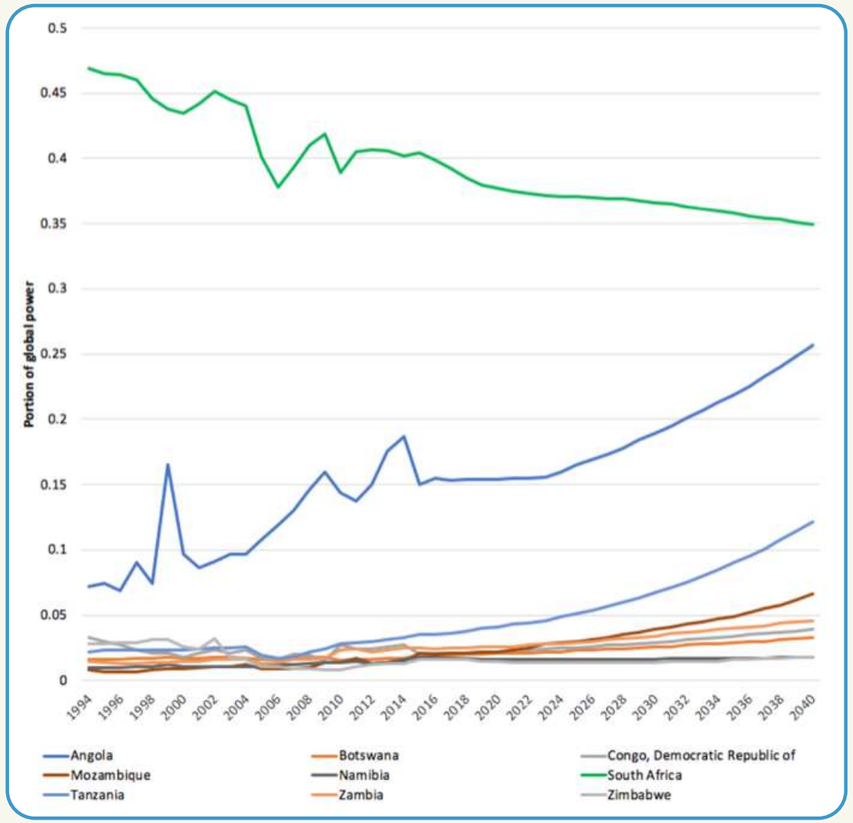


Figure 32. Distribution of power in select SADC countries (1994-2040). **Source:** : Louw-Vadren 2018

The vastly higher level of global power held by South Africa creates tensions in achieving regional integration. According to Sokos (2018), economic integration within SADC has been marked by severe economic imbalances amongst SADC Member States and has been skewed in favour of South Africa. South Africa plays a dominant role in the Southern Africa Customs Union (SACU), although such a position is unlikely to be maintained in an enlarged SACU agreement. Success of regional integration in Southern Africa depends on South Africa's ability to discharge its responsibilities in accordance with its hegemonic status (Sokos 2018).

A major source of tension in the SADC region is South Africa's outward looking stance on trade. South Africa has a unilateral trade agreement with the EU, which creates concerns amongst other SADC members that they would lose revenue from imports under the revenue sharing agreement due to lower common external tariff rates for South Africa (Brenton and Hoffman 2016). The bilateral EC-South Africa trade agreement contributed to fragmentation of SADC trade relationships with the EU, and substantially complicates the development of an enlarged customs union for the region (Brenton and Hoffman 2016). This is one reason efforts toward further integration have stalled and SADC is now engaged in developing the COMESA-EAC-SADC Tripartite Agreement, which is seen as a critical stepping-stone toward the grander plan for a continental free trade area by 2017.

Indicators of institutional performance

In order to get a snapshot of institutional performance in SADC countries, three indicators of institutional performance from the WEF Global Competitiveness Report 2019 were selected.

The indicators and their definition are as follows:

- **C&B (Checks and Balances)** includes measures of budget transparency, judicial independence, efficiency of legal framework in challenging regulations and freedom of the press.
- **Trans (Transparency)** is a measure of the incidence of corruption.
- **Future (Future orientation of the government)** includes measures of government ensuring policy stability, governments' responsiveness to change, legal framework's adaptability to digital business models, government long-term vision, energy efficiency regulation, renewable energy regulation and environment-related treaties in force.

All three indicators go from a range of 0 to 100 with 100 as the best performance.

These statistics are put together by WEF from various sources including a survey of business leaders in each country.

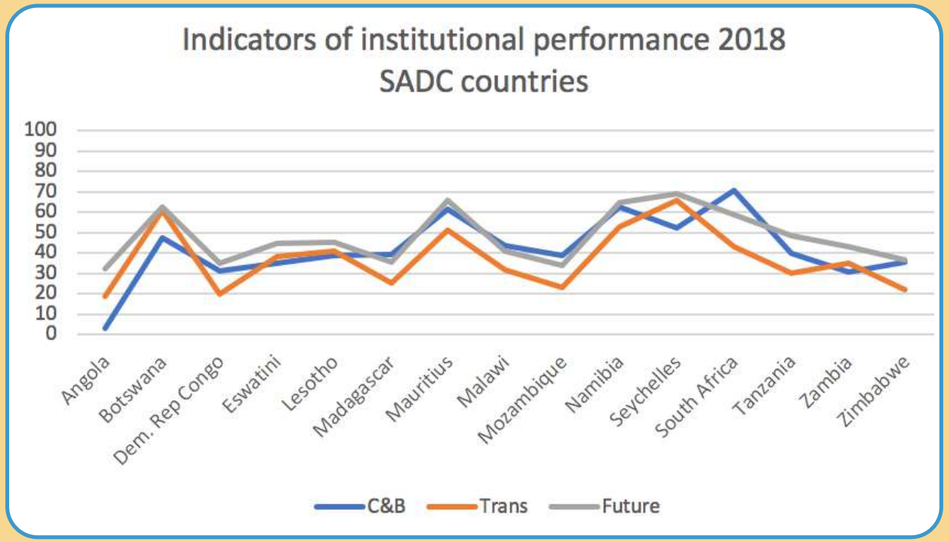


Figure 33. Indicators of institutional perfomance in the SADC countries, 2018. **Source:** Author's analysis of WEF World Competitiveness Report 2019 data

Overall, the performance ratings are low with several countries scoring in the 30s and 40s. Namibia, Seychelles and Botswana score quite high on the future orientation of the government (in the 60s), while South Africa, Namibia and Mauritius are highest scorers on checks and balances.

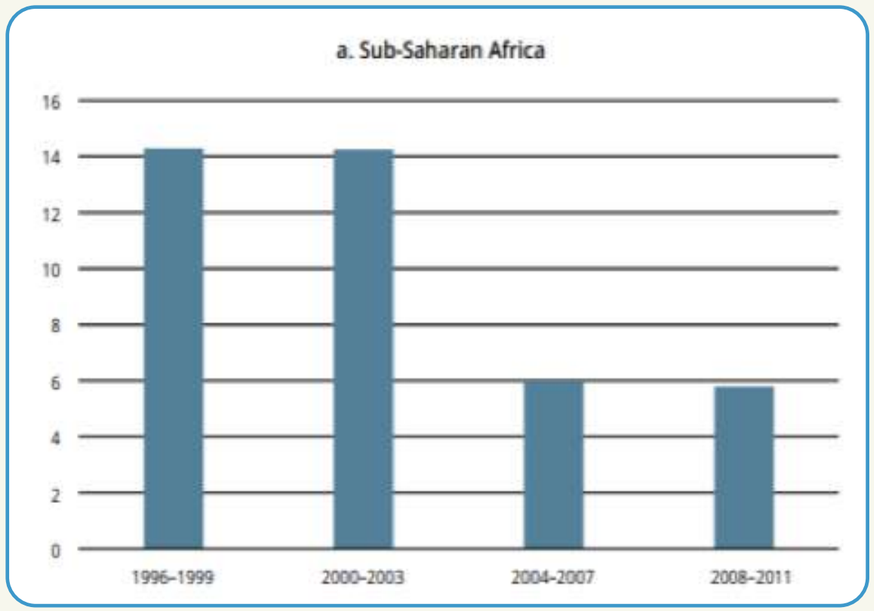
Photo: Ivan Bandura-unsplash

Agricultural policy

The SADC Regional Agricultural Policy (RAP) reflects the intention of SADC to develop a legally 'binding' instrument to stimulate sustainable agricultural development and food security in the SADC region (SADC 2013).

The RAP lays out four main goals: i.) Enhance sustainable agricultural production, productivity and competitiveness; ii.) Improve regional and international trade and access to markets of agricultural products; iii. Improve private and public sector engagement and investment in the agricultural value-chains; and iv.) Reduce social and economic vulnerability of the region's population in the context of food and nutrition security and the changing economic and climatic environment. As can be seen from the analysis provided in the section on agricultural productivity growth below, there is still considerable need for enhancing sustainable and productive agricultural growth in the region.

SADC has made progress on improving regional trade in agricultural products. Compared with other regional trade agreements (RTAs), the SADC region has one of the least distorting policy framework for agricultural products after the Accelerated Program for Economic Integration (APEI) (see figures below).



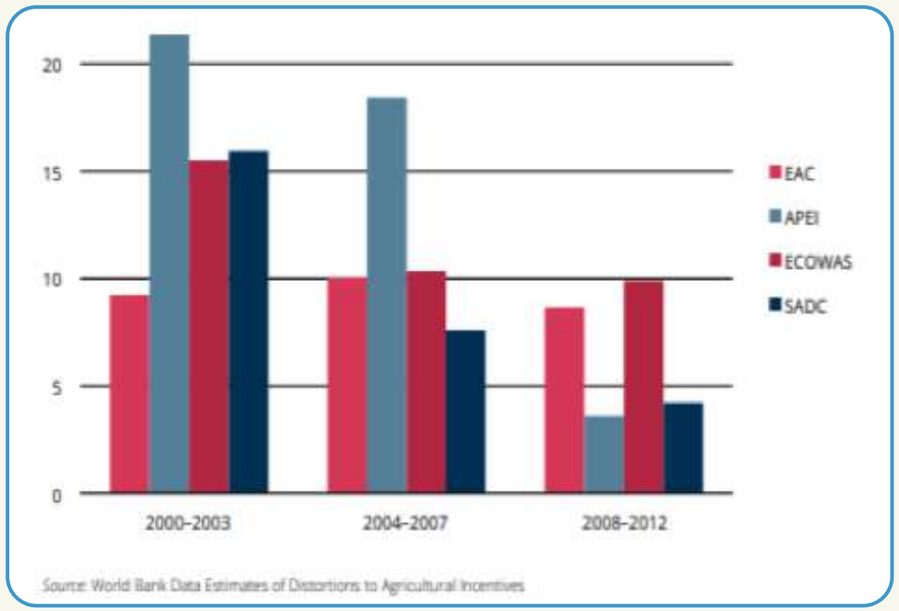


Figure 34. Applied weighted mean tariffs for primary products for sub-Saharan Africa (left) and regional trade agreement (right). **Source:** Brenton and Hoffman 2016

According to the draft RISDP 2020-2030 blueprints, the priority is to implement and enforce the measures outlined in the RAP and the accompanying Regional Agricultural Investment Policy (RAIP) 2017-2022 which was approved in 2016. The RAIP includes a budget of USD 1.3 billion. In March 2019, a program of EUR 9 million to support the operationalization of the RAP was initiated with funding from the EU and technical support from FAO (SADC 2019b).

Water management policy

The allocation of water resources between SADC countries is governed by the Revised SADC Protocol on Shared Watercourses, which came into force in 2003. The objective of the Protocol is to "foster closer cooperation for judicious, sustainable and coordinated management, protection and utilisation of shared watercourses and advance the SADC agenda of regional integration and poverty reduction" (SADC 2005). A large number of countries within SADC share river boundaries, and therefore potential future risks of meeting the allocation requirements need to be considered.

There are a number of agreements between SADC countries with regards to required allocation of water resources between them. Tensions have arisen in the past, and with future climate stressors there is a high likelihood that the enforceability or meeting of legislative requirements becomes paramount. Such agreements and partnerships are necessary to ensure sustainable water management prevails.

The SADC region has 21 transboundary river basins to manage and these fall into 3 categories: 1) Those that include non-SADC states and thus the SADC water protocol may not apply; 2) Those falling within SADC and equally across states and so more easily co-managed or those falling almost exclusively in one state; and 3) River basins not conducive to dams or water management and thus with erratic supply (CRIDF 2014).

Management of the Incomati Basin illustrates the complications involved. Located within Mozambique (31%), South Africa (63%) and Swaziland (6%), the Incomati Basin is relatively small, but is of strategic importance. The Incomati River flows from the eastern part of South Africa, through north Swaziland and into the southern part of Mozambique, where it discharges into the ocean. Coordination in water use is paramount to avoiding conflicts and water shortages. In 1982, during a drought in the region, the Incomati River dried up. Mozambique, in expressing concerns about the water levels, learned that South Africa and Swaziland were planning to build dams upstream which would have drastically affected supply to Mozambique. Following a number World Economic Forum 2019 Global Competitiveness Index of meetings and discussions, the Tripartite Agreement on the Projections and Sustainable Utilization of the Water Resources of the Incomati and Maputo Watercourses (TIA) was signed in 2002 between the 3 countries (CRIDF 2014).

AGRICULTURE AND PRODUCTIVITY GROWTH

The Southern African region is characterized by low or even negative productivity growth in agriculture and with most of the growth obtained through agricultural land expansion rather than more efficient use of agricultural inputs. At present, most production and irrigated area occurs in the arid south. The northern areas have greater potential for further development. Middle income countries generally did better than low income countries on both land and labour productivity growth for crops and overall productivity for livestock production over recent years. Post-harvest losses are over 30%.

The Southern African region is characterized by four ecozone bands mostly determined by rainfall patterns and ranging from semi-arid and desert conditions in the southwest, and humid and tropical conditions in the north and east. Cereal production is dominantly rainfed and covers more than 50% of the agricultural land in the Southern African countries of Lesotho, Malawi, Mozambique, Namibia, South Africa, Swaziland, Tanzania, Zambia and Zimbabwe (Vlek et al. 2019). Maize is the dominant crop with nearly 10 million hectares followed by sorghum, millet and wheat with about 1 million hectares each. There are two major farming systems that dominate land use in the 9 countries of the Southern African region listed above. These are the mixed maize system and the agro-pastoral systems. Both are currently low productivity and low intensity.

Of the total area of the 16 SADC Member States (986,246,000 ha), only 6 is cultivated (Nhamo et al. 2019). Smallholder farming is the main source of livelihoods in rural areas and is mostly rainfed, relying on increasing variable patterns of rainfall. Land with irrigation potential is about 20 million ha, yet only 3.9 million ha is actually irrigated.

Most food production (including exports) and irrigation in the region occurs in the arid south—in South Africa by a large margin. Further north, in Angola, Zambia, and the northern parts of Mozambique, water resources are abundant, yet irrigation farming is far less developed and inefficient, resulting in water resources being less intensely managed (Vlek et al. 2014).

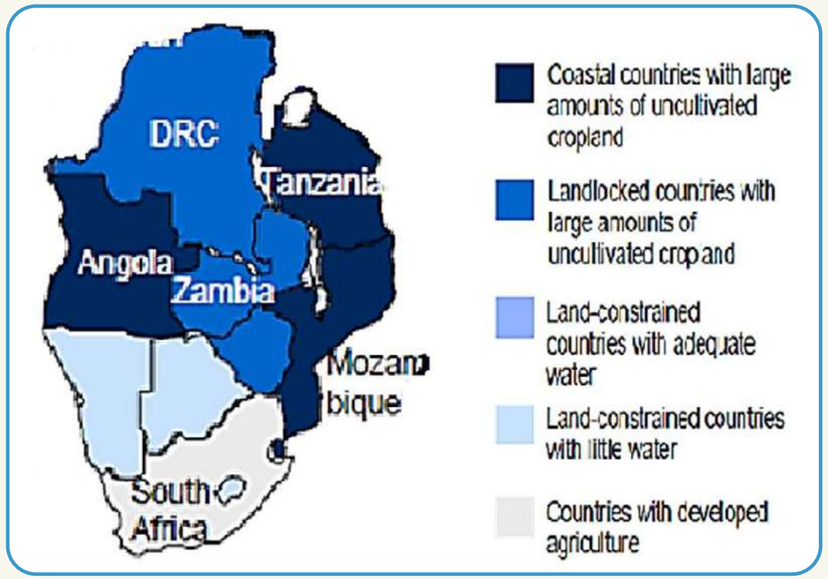


Figure 35. Agricultural potential is the SADC region. **Source:** CRIDF 2014

The figure above from CRIDF (2014) shows the distribution of agricultural potential for part of the SADC region determined by the amount of uncultivated land and water constraints.

In recent years, maize production has been decreasing in most countries in the region mainly due to extreme droughts and floods (Nhamo et al. 2019). Table 6 from Nhamo et al. (2019) shows the deficit levels of maize production for the recent past.

Country	2011-2015 Average (1000 tons)	2015 Maize Production (1000 tons)	2016 Maize Production (1000 tons)	% Change 2015/2016	No. of Affected People in 2016
Angola	1366	1878	1500	-20	756,000
Botswana	21	4	1	-75	1,100,000
Lesotho	74	79	25	-68	709,000
Madagascar	393	350	300	-14	1,400,000
Malawi	3583	2776	2369	-15	6,500,00
Mozambique	1602	1357	1350	-1	2,000,000
Namibia	61	38	46	21	729,000
South Africa	12,345	10,629	7733	-27	14,300,000
Swaziland	89	82	33	-60	638,000
Zambia	2894	2618	2873	10	976,000
Zimbabwe	1083	742	512	-31	4,000,000

Table 6. 2016 maize production deficit in SADC countries and the number of affected people. **Source:** Nhamo et al. 2019

Agricultural growth rates as measured by changes in the agricultural GDP in the region have been low and most have not met the CAADP target of a 6% growth rate. Several countries had lower growth rates in the 2003-2010 period as compared with the 1995-2003 period, with Namibia and Zimbabwe showing negative rates in the later period (see figure 36).

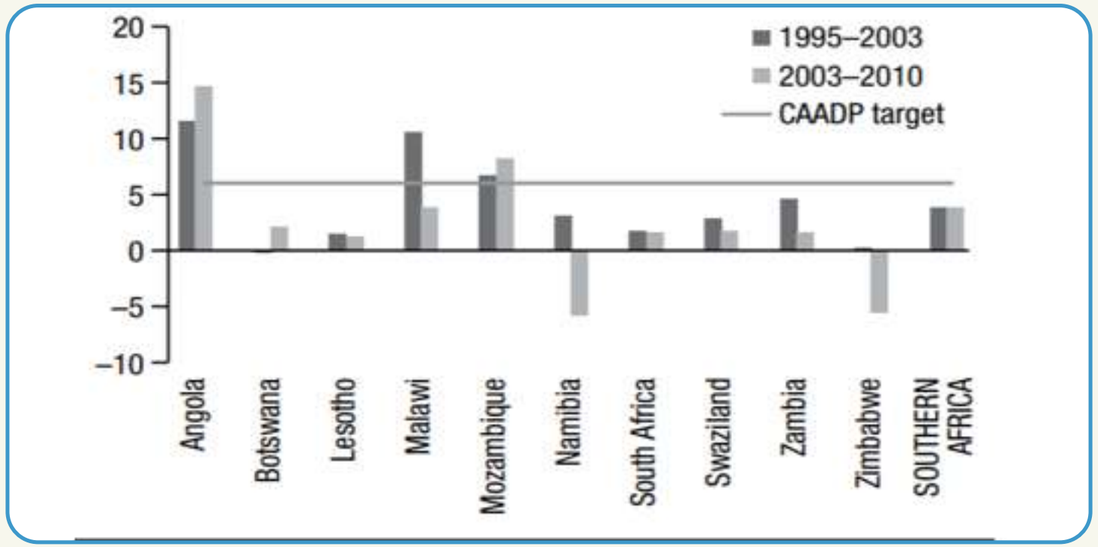


Figure 36. Average yearly agricultural GDP growth rate (%). **Source:** Badiane and Collins 2016

Turning to the growth in crop output over the 2000-2011 period, five countries of the fifteen SADC countries analysed had negative growth rates. Angola, which has a roots and tuber farming system in its northern region had a significantly higher increase in crop output compared with all other countries.

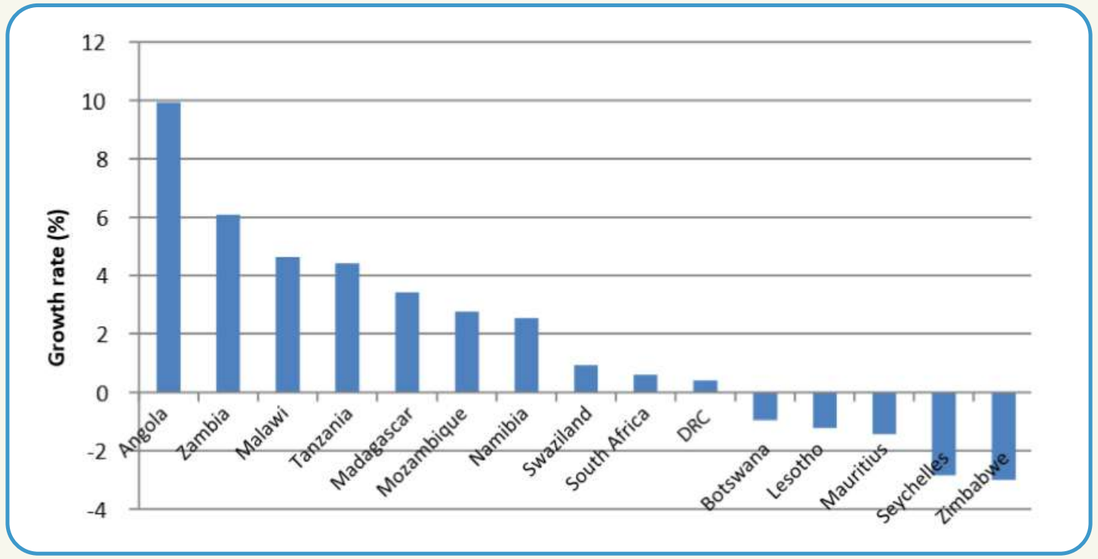


Figure 37. Growth in crop output, 2000-2011. **Source:** Chilondra et al. 2013

Cereal yields in the region for the 2000-2010 and again for 2010 to 2017 period were generally stagnant. Several countries were below the RIDSP target level of 2,000 kg/ha.

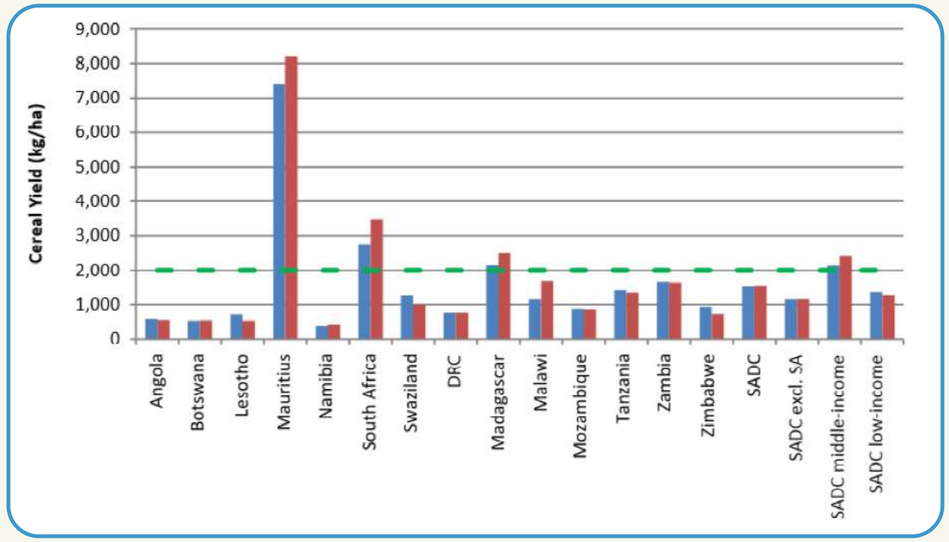


Figure 38. Trends in cereal yield in SADC countries, 2000-2010. **Source:** Chilondra et al. 2013

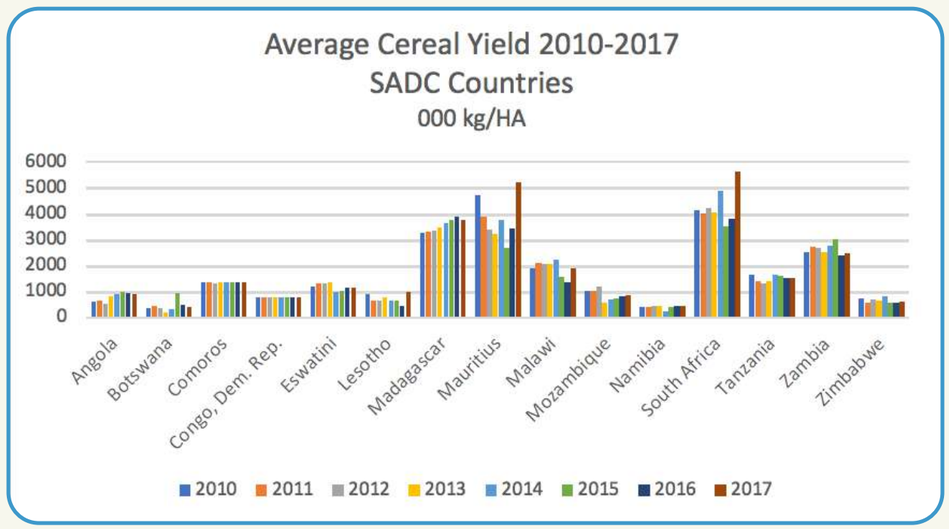


Figure 39. Average cereal yield in the SADC countries, 2010-2017. **Source:** World Development Bank WDI Indicators[13]

[13] Author's download of data: http://datatopics.worldbank.org/world-development-indicators/

Growth rates of land and labour productivity over the 2000-2010 period vary considerably over the fifteen SADC countries analysed. Four countries—Seychelles Zimbabwe, DRC and Lesotho—showed negative growth in labour productivity. South Africa showed the highest level of growth in labour productivity growth and Angola showed the highest growth in land productivity.

The middle-income countries were found to have higher labour productivity than the low-income countries, although land productivity in the low-income countries was higher. However, the middle-income countries had higher growth rates in both labour and land productivity compared with the lower-income SADC countries. Labour productivity grew at an annual average of 0.1% in the SADC middle-income countries during the 1980-2010 period, while labour productivity declined in the low-income countries at an annual rate of -0.4% for the same period (Chilondra et al. 2013).

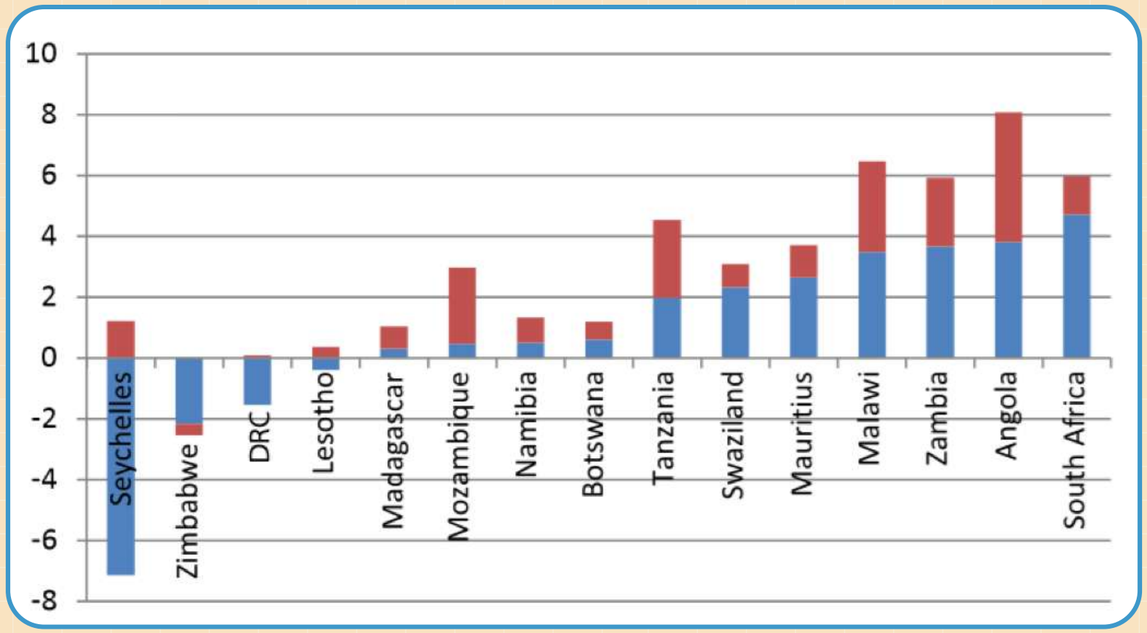


Figure 40. Growth rates in labour and land productivity in SADC countries (annual average, 2000-2010). **Source:** Chilondra et al. 2013

Trends in livestock productivity also show considerable variation across SADC countries with the middle-income countries showing higher levels than the low-income countries and South Africa dominating

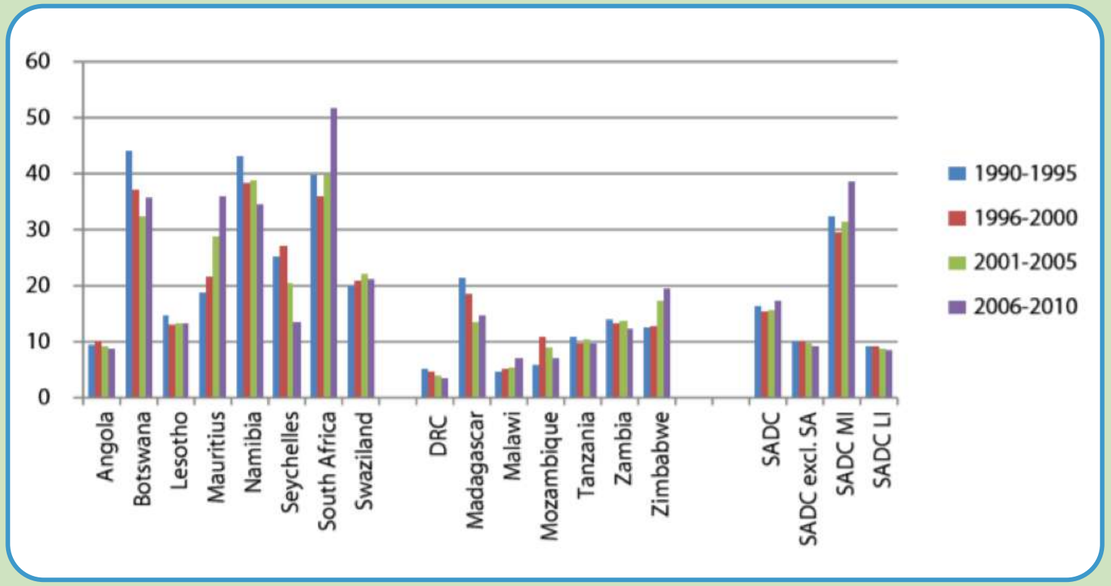


Figure 41. Trends in per capita livestock production in SADC countries, 1990-2010. **Source:** Chilondra et al. 2013

Overall, for the 2000-2010 time period and the fifteen SADC countries analysed, the countries that made substantial improvements in land productivity in 2000-2010 include Angola and South Africa in the middle-income countries, and Madagascar, Malawi, Tanzania, Zambia and Mozambique in the low-income countries. In terms of labour productivity, Angola, Mauritius, South Africa and Eswatini grew substantially from the middle-income countries in 2000-2010, while Malawi, Tanzania and Zambia grew substantially from the low-income countries during the same period. As such, Angola, South Africa, Malawi, Zambia, Eswatini and Tanzania are the countries that performed well over this period in terms of both land and labour productivity (Chilondra et al. 2013).

Analysis of the sources of productivity growth indicate that agricultural land expansion was a significant contributor. The growth in total factor productivity was generally quite low for countries in the region with only South Africa showing major growth (see map on the right).

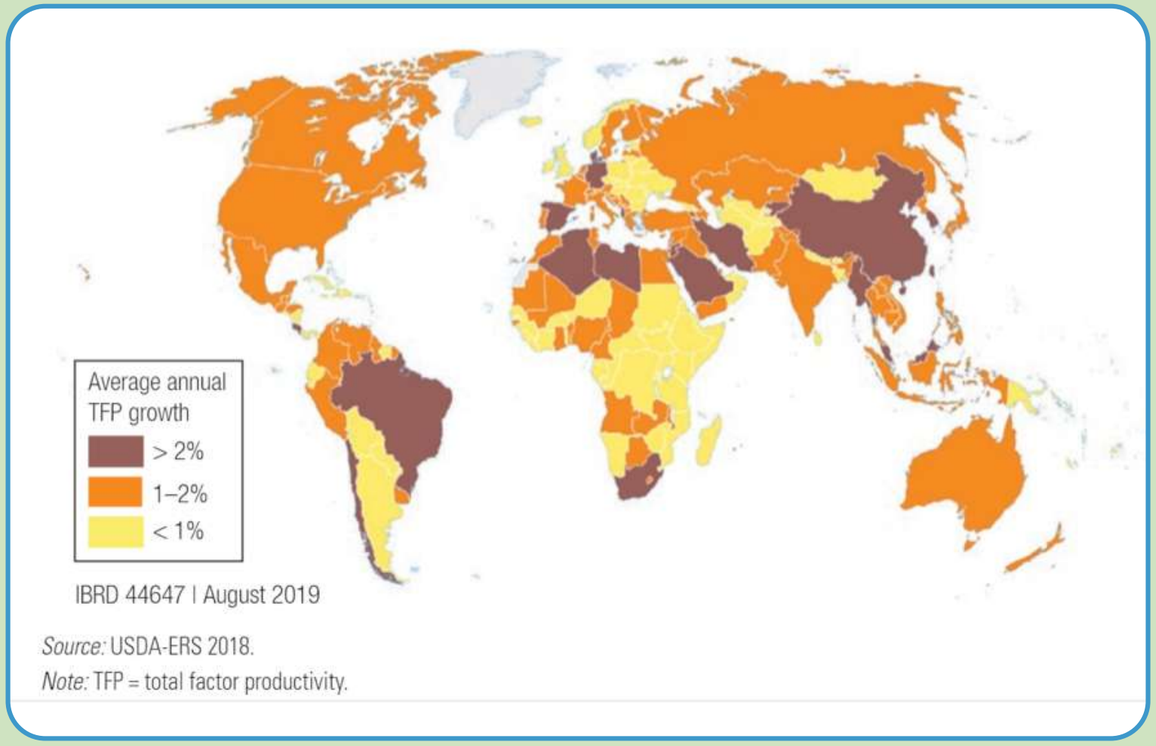


Figure 42. Gains in agricultural total factor productivity varied greatly across countries from 1971 to 2015. **Source:** Fuglie et al. 2019

Pre- and post-harvest losses in Southern Africa amount to 30% or more. Areas where food production systems are intensified and serve commercial markets such losses need to be eliminated through proper pest management, extension and infrastructural investments (Ransom et al. 2019).

Photo: Ollivier Girard (CIFOR)

03 Thinking About an Uncertain Future: Strategizing Under Uncertainty

The section above described fifteen mega-trends for the Southern African region, detailing recent patterns for these key drivers of today's conditions. However, we cannot assume these trends will continue into the future as they have in the recent past. High-impact, large-scale, disruptive events—such as COVID-19—are likely to grow in frequency as the world changes, becomes more interconnected, is put under greater pressure through demand and consumption growth, and is challenged by environmental change-related events arising from increasingly extreme weather, or emergence of pests and diseases. Such events change the evolution of drivers—through changing economies, markets, social attitudes, politics and geo-politics.

The future is far from predictable—even with the most detailed and complete analysis of mega-trends to rely upon. This unpredictability is summed up with acronym **"TUNA": Turbulent, Uncertain, Novel, Ambiguous** (Ramírez and Wilkinson 2016). The future is turbulent because of its systemic fragility and non-linearity, meaning events can lead to escalating impacts (Homer-Dixon et al. 2015); uncertain because these are often highly unpredictable and, from a climate perspective, unknown; novel because technological, social and environmental change create unprecedented situations; and ambiguous because every problem or solution is wicked—with both "winners" and "losers".

The mega-trends identified are also typically contributing towards increasing uncertainty through undermining environmental sustainability. For example, economic and population growth drive unsustainable patterns of consumption, which drive climate change that then reduces the likelihood of existing trends continuing in a linear fashion because it contributes to disruption and destabilisation of our ways of living. In the long term, therefore, continuation of the "business-as-usual" global mega-trends is not at all likely nor desirable.

Furthermore, current economic growth modalities are facilitated by developing complex trade networks and just-in-time supply chains. Increasing connectivity between nations means that events or hazards occurring in one part of the world can create a cascade of effects that have widespread and diffuse impacts. Just-in-time supply chains increase vulnerabilities to hazard events; by removing redundancy in the name of efficiency, if something happens, the supply chains grind to a halt. Such shocks, like COVID-19, may be disruptive enough that they also unshackle "business-as-usual lock-in" and disruptively provide opportunities for rapid change. Given this, what might the future look like and how can the mega-trend analysis help in diagnosing it?

Scenarios

Aiding decision-making under uncertainty

Scenarios are a route to aid decision making under uncertainty (Courtney et al. 1997), when past trends cannot necessarily be extrapolated into the future with confidence, and where the future is likely to be shaped by drivers or events which may plausibly lead to very different outcomes.

Scenarios can inform today's thinking about strategic decisions through exploring different possible futures. They examine a range of plausible futures, not to forecast what they may be like, but to provide a mechanism for thinking through the challenges that might be encountered and the opportunities that might arise. Scenarios are most useful when there is uncertainty about some of the factors that may significantly shape the future and when a range of outcomes may be plausible (even if some are more plausible than others).

Decisions need to be taken today against the backdrop of future uncertainty, and many will play out over timescales during which things may change radically. Thus, scenarios can be a tool to examine blind spots and broaden perspectives; they are less about "betting on a future" and more about stress-testing plans to see—if the world diverged from existing trends—whether decisions made in the near future would remain "fit for purpose". Can our plans be robust to alternative futures? Given how TUNA the current world is looking, scenario thinking is more important than ever before.

Scenarios

Mega-trends in the context of recent food system scenarios

A number of scenarios analyses have been published recently for food systems. [14]Whilst scenarios may take a variety of forms, a common approach is to use participatory processes to identify the two most important drivers which will shape the future, but about which there is great uncertainty in terms of what form they will take. A recent report taking this approach and asking "what will global food systems be like in 2050?" was published by the World Economic Forum (WEF) in 2017 (WEF 2017).

The WEF's two key axes were chosen because they are inherently unknown in terms of how they may develop but are very strong determinants of the way local food systems may be shaped.

The two dominant factors were:

1. **Dietary shifts:** away from dependence on food systems that have focussed on growing calorie-rich but nutrient-poor diets resulting in high externalised costs on health and environment, **to food systems that provide more healthy diets in more sustainable ways** (Swinburn et al. 2020). The drivers for such shifts include climate mitigation, the costs of malnutrition and associated non-communicable diseases (whether from the perspective of

   (a) improving personal health;

   (b) business productivity and economic growth (Wellesley et al. 2020); or

   (c) the social costs of poor public health), impacts on health from production (the rise of anti-microbial resistance from intensive livestock production, urban air quality being impacted by intensive agriculture and volatilization of nitrogenous fertiliser) and pursuit of environmental sustainability (e.g., reduction in plastic waste, reduction in land degradation, reversing biodiversity losses, reduction in food waste, societal demand for fewer pesticides to be used in agriculture).

Other exercises that consider the shift to healthy and/or sustainable diets include Agrimonde,[15]the EU JRC's food systems' foresight study (Bock et al. 2014) and the Shared Socio-Economic Pathway 1 for the IPCC (O'Neill et al. 2017).

Whilst "healthy diets" are not exactly synonymous with "sustainable diets" there is a significant overlap between the two as (a) healthier diets have caloric and nutrient intakes that better match dietary requirements, and (b) healthier diets are typically higher in plant-produced foods, and less reliant on meat and dairy, with livestock products' high environmental footprints (Aleksandrowicz et al. 2016; Nelson et al. 2016). Hence, given the alignment between diets that are healthy and sustainable, and the costs of diets that are neither, the two are increasingly addressed together.

2. **Shifts in the momentum for globalised trade towards more regional or local food systems.** The last five years' geopolitical trends impact on the globalisation agenda, to the point where "deglobalisation" is discussed. This arises from changes in the last few years that undermine the post-war architecture of international cooperation, in association with the rise of inward-looking and protectionist policies driven by increasing global inequality, including migration. These new trends have made a future of ever more liberal trade look uncertain as market-distorting barriers are erected. COVID-19, other forms of disruption from climate change and environmental breakdown, alongside geopolitical instability can also undermine supply chain resilience, leading to a perceived need for more local sourcing from a local security—or resilience—perspective.

Attitudinal change (such as the belief that local food is somehow better) might also drive such a change. The WEF scenarios exercise is not alone in considering the future of globalisation: the EU JRC's food safety foresight study (Mylona et al. 2016) and its scoping study, the EC's Food safety and nutrition in 2050 scenarios report (FCEC 2013), as well as the IPCC's Shared Socio-Economic Pathways (e.g., SSP3) all consider more regionalised economies (O'Neill et al. 2017).

The US (NIC 2017) and UK (Ministry of Defence UK 2018) governments publish security-facing "Global Strategic Trends" reports; the most recent editions both utilise scenarios which consider radical change to the international architecture of trade and cooperation. Other reports have highlighted the balance of risks, benefits and costs of trade, including the UK's climate change risk assessment (Challinor et al. 2016) and the EU JRC's 2030 foresight report on food (Maggio et al. 2015).

[14] See a compilation at https://www.foresight4food.net/ [15] https://www.cirad.fr/en/publications-resources/publishing/studies-and-documents/agrimonde-terra-foresight-study

Scenarios for the future of food systems in Southern and Eastern Africa: the AFRICAP results

How would the drivers, uncertainties and scenarios for food systems change if we move from the global level to analyses specific to the Southern African region? The UK Global Challenge Research funded project, Agricultural and Food-system Resilience: Increasing Capacity and Advising Policy (AFRICAP), recently ran participatory scenario exercises in four countries: Malawi, South Africa, Tanzania and Zambia. The exercises brought together stakeholders (approximately 200 across the four countries) for four day-long workshops to discuss the drivers shaping the future of agri-food systems in each of the four countries, and to agree and articulate sets of plausible alternative futures. These narrative-based futures have subsequently been utilised to quantitatively model various agri-food development pathways, with the objective of maximising positive and minimising negative outcomes to ensure each country's pathway is concordant with the vision of "The Africa We Want" of the AU's Agenda 2063. Participants included national and regional government officials and policy stakeholders, research academics and civil society representatives, plus facilitators from AFRICAP.

The methodology within each workshop was to list the factors that would shape the food system—the mega-trends and drivers, and then to separate them into "known knowns" and "known unknowns". The "known knowns" are drivers about which there is low predictive uncertainty into the future: participants are sure about their magnitude. For example, the demographic distribution of a country's population can be projected into the future with relative uncertainty. "Known unknowns", in contrast, are drivers that there is certainty about that they will play a role in shaping the future, but will impact very different depending on the form they may take (for example, whether the world is more globalised or less globalised makes a radical difference to the drivers of agriculture).

The standard methodology is to use an iterated series of discussions and anonymous voting to pick the two most influential "known unknowns" to create a set of orthogonal axes defining four scenarios.

Interestingly, stakeholders in all four countries agreed that climate risks and how they would play out was one of the two critical uncertainties.

The second axis varied by country:

- Land tenure and reform (little versus radical) (South Africa);
- Technology innovation and adoption (weak versus strong) (Tanzania);
- Market access and functioning local to global (weak versus strong) (Zambia); and
- Effective policy implementation aligned to deliver food systems outcomes (versus poorly aligned, silo-ed, policy) (Malawi).

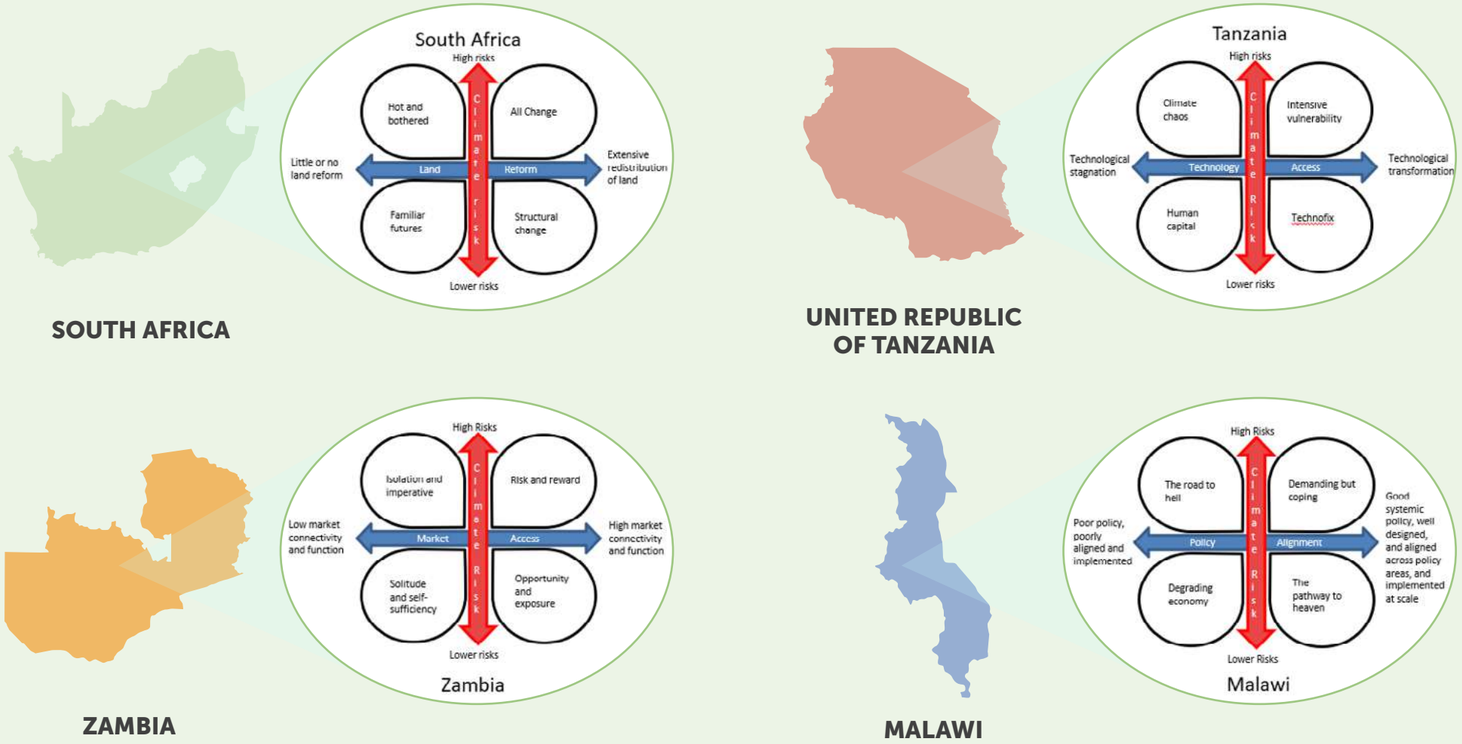


Figure 43. Scenario exercise.

Whilst the “known unknowns” varied by country, the five axes were discussed in each country, and are thus a representative set of the concerns for countries in Southern Africa. The sets of axes create four sets of scenarios, [16]with each quadrant being developed into a narrative interpreting how the world in each quadrant would “feel”.

It is instructive to examine the axes in turn.

Climate risks: from low to high

The issues considered as important in the sample countries included the following key questions:

- How will changes in rainfall and water availability affect food production and demand, pests and diseases, and land use?
- What can be grown where, in view of rainfall patterns and water availability?
- What options for adaptation are there in the agricultural sector?
- Will different sections of society be more/less vulnerable to climate change?
- What will happen to the incidence of “natural disasters” like Cyclone Idai?
- How will climate change elsewhere affect the potential for trade (export markets and import trade flows underpinning food and nutrition security)?
- How will the government mitigate the impacts of climate change?
- Will international efforts to address climate change be successful?

A world of lower climate risk would occur where the global actions to mitigate climate risks were successful, and so weather patterns continued to change beyond how they are now, but broadly in line with projections from a low emissions scenario (RCP 2.6). Thus, climate risks will increase beyond today, but not as rapidly as within a high emissions scenario (e.g., RCP 6.0). Weather will therefore continue to change, volatility in international markets increase due to shocks arising from weather impacts. However, the implication of the world adopting a low-mitigation pathway also suggests stronger climate ambition towards carbon neutrality. That in turn has implications for agriculture and its markets (e.g., the increase in land use for carbon storage, dietary shifts in global markets towards plant-based diets, etc). Thus, a “low risk” scenario implies both coping with changing weather, but also suggests significant structural changes to agriculture through land-based mitigation. [17]A world of “higher climate risks” implies less immediate structural change in agricultural markets but increasingly large impacts from climate change. These would drive significant market volatility within any country, regionally and globally. Thus, adaptation to extremes becomes more challenging, and ultimately structural change may arise from market shocks in future decades.

Photo: E.W. Cordon (ILRI)

Access to markets (low to high)

The key questions raised across the sample countries included market access locally, regionally and internationally, and how it was facilitated through regulation and investment in both hard infrastructure (e.g., transport networks) and soft infrastructure (information technology). Furthermore, the issues of how the markets functioned to match supply with demand, their volatility and the market-prices (to farmers and consumers) were important considerations:

- Will physical infrastructure (e.g., storage, roads and transport) be developed at sufficient speed and scale? Will soft infrastructure (information, regulations, transparency) be developed effectively?
- How will the balance between export and import of agricultural and/or food commodities evolve as part of a connected system of regional and/or international trade?
- Will domestic markets function effectively such that supply and demand dynamics are responsive?
- How will supply and demand dynamics affect price stability and affordability of food and agricultural inputs?
- How will subsistence and small-holder farmers integrate with markets?
- Will opportunities for value-addition and agro-processing be realized?
- How will markets facilitate or limit fair prices for farmers, and the dissemination of new technologies and improved practices?

[16] https://africap.info/wp-content/uploads/2019/07/Malawi-Scenarios-Policy-Brief-July-2019.pdf; https://africap.info/wp-content/uploads/2019/07/South-Africa-Scenarios-Policy-Brief-July-2019.pdf ; https://africap.info/wp-content/uploads/2019/07/Tanzania-Scenarios-Policy-Brief-July-2019.pdf; https://africap.info/wp-content/uploads/2019/07/Zambia-Scenarios-Policy-Brief-July-2019.pdf. [17] See extensive review in https://IPCC.ch/SRCCL

- What will the role of the private sector be, who will investors be (urban elite/international citizens), and what will they invest in (production, processing, trade)?

Thus, the scenarios for the future include a future where market integration was high (good access to markets for small and larger scale farmers, access to markets locally, regionally and further internationally, and where markets functioned well: transmitting price signals smoothly, with little volatility, and market competition allowed fair pricing). The converse scenario of low market access and poor functionality was where there was little access to markets, markets supplied goods in a volatile way (with prices fluctuating for producers and consumers), and sometimes failing—especially in the event of climate disruption, leading to food and income insecurity.

Land tenure reform (little or no change to extensive land reform)

Whilst formal land reform was particularly a focus in South Africa, the issue of land tenure and its governance was discussed in multiple countries as an issue. Some of the key questions raised included:

- How will land use, natural resource degradation, water scarcity be governed and managed and how will this be influenced by land tenure?
- How will “common land”, “community land” and “state land” be governed and will governance be efficient and adequate to avoid land grabs?
- What implications will land acquisitions and changes in tenure have for poverty and food access amongst the most marginalized?
- How will land reform be achieved?
- How does the uncertainty around land reform affect and limit near-term financial investment?
- How will any land reform affect investors, jobs and economies in agriculture, the resilience of the agricultural sector, and trade?
- Will land reform lead to reduced farm size and scale, and will it affect competitiveness in the local and national economy?
- Will land reform restrict or enhance exports?
- How will politics influence land reform implementation?
- How will land reform affect food security?

For the purposes of the scenarios, the discussion focussed on there being little or no change from today at one end of the axis, and significant land reform at the opposite end. This includes security of tenure for smallholder farmers, good governance of communal lands (avoiding land-grabbing from high income countries or multinational corporations, sustainable land management to avoid land degradation, etc.) and, in the case of South Africa a redistribution of land to create greater equity. Little or no land reform will maintain “business-as-usual” drivers of productivity and sustainability.

Land reform has the potential to change these; increasing equity and security of tenure, and enhancing incentives for sustainable land management (through security of investment arising from tenure). On the other hand, significant land reform can have downside risks in increasing food insecurity in smallholders and reducing overall productivity through downscaling intensive, larger enterprises (as occurred in Zimbabwe (Mudau et al. 2018; Ramutsindela and Hartnack 2019)).

Access to technology (as current to high)

The issues considered as important in the sample countries included the following key questions:

- To what extent will new innovations in agricultural production be adopted and transform production? Will technologies help farmers adapt to and/or mitigate climate change?
- Who will be in a position to access and benefit from technological developments?
- Will food regulation and trade be harmonized?
- What degree of political voice will be afforded to stakeholders from across food value chains, both nationally and internationally?
- How will new and emerging technologies shape agriculture and food? Will regional alliances be strengthened, allowing wider technology adoption?

- What will be the impacts of future technologies? Will they be affordable and accessible?
- Will farmers want to adopt them?
- Will information, training and extension services be appropriate and sufficient?
- How will technologies affect farm size and agricultural employment?

These issues translate into a scenarios axis by imagining futures defined by today's conditions continued into the future on the one hand, and a different future where there was significant support for the rollout, adoption and use of new technologies, harmonised in standards applicable in countries of production and consumption, particularly across the region, to support regionalised supply chains. Such a future will only be underpinned if technologies are also socially licensed through citizens'

(a) desire to consume products produced in new ways (such as produced using genetically modified techniques); and

(b) acceptance of the social impacts created (e.g., widespread uptake of advanced technologies has implications for employment rates). Given the range of social and regulatory constraints to adoption, development of new technologies is necessary but not sufficient for their uptake at scale.

Policy and its alignment (poor policy, not aligned across siloes, weakly implemented to integrated policy, aligned across policy domains and well implemented).

The final scenario axis selected by the participatory process pertains to the development and implementation of government policies. In particular, whether policies are developed but implemented badly (e.g., not assessed and monitored) or whether there is material policy mis-alignment (e.g., trade policy not supporting agricultural policy, or agricultural policy not aligned with infrastructure policy). This is perhaps most relevant to the area of food systems which impinge on a range of policy areas: agriculture, environment, health and nutrition, food security, trade, employment and climate change, for example.

The issues considered important in the focal countries included:

- How can "whole of government approaches" be developed given that policymakers tend to be siloed within ministerial teams with little cross-government visibility?
- How best to build capacity so policymakers understand other areas?
- How can policy development and its implementation be better integrated? Particularly when implementation may be the responsibility of sub-national regional offices.
- How can standards (e.g., on agriculture) be harmonised across complex, multi-country supply chains?
- Are "system approaches" to policy too complex to implement?

Plausible extremes articulated on this continuum include, at one end, poorly co-ordinated and aligned policy, which is enacted but not monitored, so that actors face conflicting goals (e.g., people without access to nutritious food being incentivised to produce tobacco for an export market; agricultural incentives being put in place without farmer training; support for production of commodity crops without investment in market infrastructure; competition for land being enhanced through different policy areas not being minimised and managed; environmental policy undermining food security policy, and vice versa).

Conversely, at the other end of the scale, a plausible alternative may involve cross-government coordination of policies such that multiple goals are aligned; these are coupled with investment in implementation and monitoring, and there are sufficient incentives to stimulate uptake.

Photo: Egle Sidaraviciute-unsplash

Summary of scenarios from the SADC region: drivers, trends and uncertainties

Additional insights on future uncertainties in the Southern African region comes from a recent synthesis of scenarios for the region. This study of recent scenario work relevant for building climate-resilient livelihoods in the SADC region was conducted as part of a joint initiative of the SADC Secretariat's Food, Agriculture and Natural Resources (FANR) Directorate, the Centre for Coordination of Agricultural Research and Development for Southern Africa (CCARDESA), the International Livestock Research Institute (ILRI), through the CGIAR Research Program on Climate Change, Agriculture and Food Security (CCAFS) and the German Development Cooperation funded by the German Federal Ministry for Economic Cooperation and Development (BMZ).

The study summarized the drivers and uncertainties associated with a set of 41 scenarios at global, sub-Saharan African, Southern African and country levels of analysis. The table on the right gives a sample of the mega-trends and drivers identified at the SADC regional level, which have also been covered in the mega-trend analysis in the previous section. Some specific examples of the uncertainties that arose in the scenario development process are noted for each of these in the table.

	Trend	Source of uncertainty
Effectiveness of regional economic cooperation	Over 2010–17, EAC, SADC and SACU were the only regional economic communities with intraregional trade above 10%. SADC intraregional trade was 19% of the region's world trade in 2008 and rose to a peak of 22% in 2016 before falling to 20.4% in 2017.	Political and economic crises in member countries generating conflict and inability to cooperate within region. Dominant role of South Africa in SADC and bi-lateral agreements they make (as with EU trade agreement).
Effectiveness of regional management of water resources	Agreements in place, implementation weak.	Climate change impacts on rainfall patterns.
Source of economic growth	Services dominate the region's economy, largely due to the influence of South Africa, on average contributing about 60% to GDP from 2010 to 2017, followed by mining and quarrying at 14.4% and manufacturing at 11%.	Can the region successfully grow industry/manufacturing as per regional plans?
Income distribution	Worsening	Capacity/willingness to implement policy measures to achieve more equal distribution.
Food import/ export patterns	Imports increasing despite expansion in domestic production.	Investments in domestic food production and value chains. Greater integration of SADC food trade.

Photo: Georgina Smith (CIAT)

Conclusions

The mega-trends that have, over recent decades, shaped the world into the one we know today are changing (e.g., power shifting from West to East, the multilateral cooperative world driving increasing globalisation coming under strain from competition between states and inequality). In addition, the growing fragility of the globalised world means disruptions are becoming more common: COVID-19, agricultural pests and diseases, climate shocks and migration of people. Together, “events” and changing trends all lead to greater instability and uncertainty about the future. What has happened in the last decade or so suggests that, compared to our views at the turn of the century, the world of the future is less likely to be a predictable extrapolation of the past.

The discussion on mega-trends and their associated uncertainties illustrates the potential for a range of plausible futures, some of which have been explored using scenarios. These futures will be shaped by events—like COVID-19, as well as drivers, some of which we know and can predict, but also some of which we know but they are not currently predictable. This latter category includes climate risks, access to markets and technology, structural changes around the access to and tenure of land, and more sophisticated policy frameworks tackling challenges systemically.

There is a range of alternative, plausible futures that suggests three key questions for today’s decision makers:

If business-as-usual is not an option: what will the future look like?

Given that the emerging drivers of the global and regional economies differ from the past, and yet the future is increasingly uncertain, how is it best to think about designing today’s policies? Decisions made today, based on looking-backwards, may become less fit for purpose as the future diverges from the past. Whilst scenarios are not a means of predicting the future, thinking about alternative futures within a scenario framing is a route to challenging simple extrapolation of the past that may not be fit for purpose.

Photo: Nicolas Picard-unsplash

If “black swan” events are likely to happen, will that disrupt us and shift us towards a different future?

Today’s economies often seem impossible to change, because there is so much invested personal, political and financial capital in our current way of running things (as well as planning for the future). Lower income countries are invested in replicating pathways to development that have historically allowed higher-income countries to achieve their economic success. However, as COVID-19 has shown, “business-as-usual” thinking about development can be undermined by events.

Whilst disruptive events by their nature create acute changes, some of which are painful, they also change the degree that the system is locked-in to its current trajectory. In some circumstances, such events can drive structural change sufficient to re-chart the direction of travel. Recognition that such events occur, and will occur more frequently, reduces the degree that decision-makers necessarily are locked-in, or constrained, in believing the future is a simple linear development of the past.

How will today’s decisions play out well if the future changes?

A key question for decision-makers today is: “What happens if today’s policies are geared around assumptions about mega-trends that turn out to be incorrect?”. For example, if investments in building climate-resilient livelihoods are based on increasing access to international markets just as the world is entering a phase of “deglobalisation”? Scenario exercises help imagine different futures to ensure that today’s decisions do not lock the system into a pathway that is increasingly difficult to achieve. They therefore help develop robust, future-proofing of decisions given the uncertainty of the future.

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