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Centre for Coordination of Agricultural Research and Development for Southern Africa

SADC Futures
Developing Foresight Capacity for Climate Resilient Agricultural Development

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

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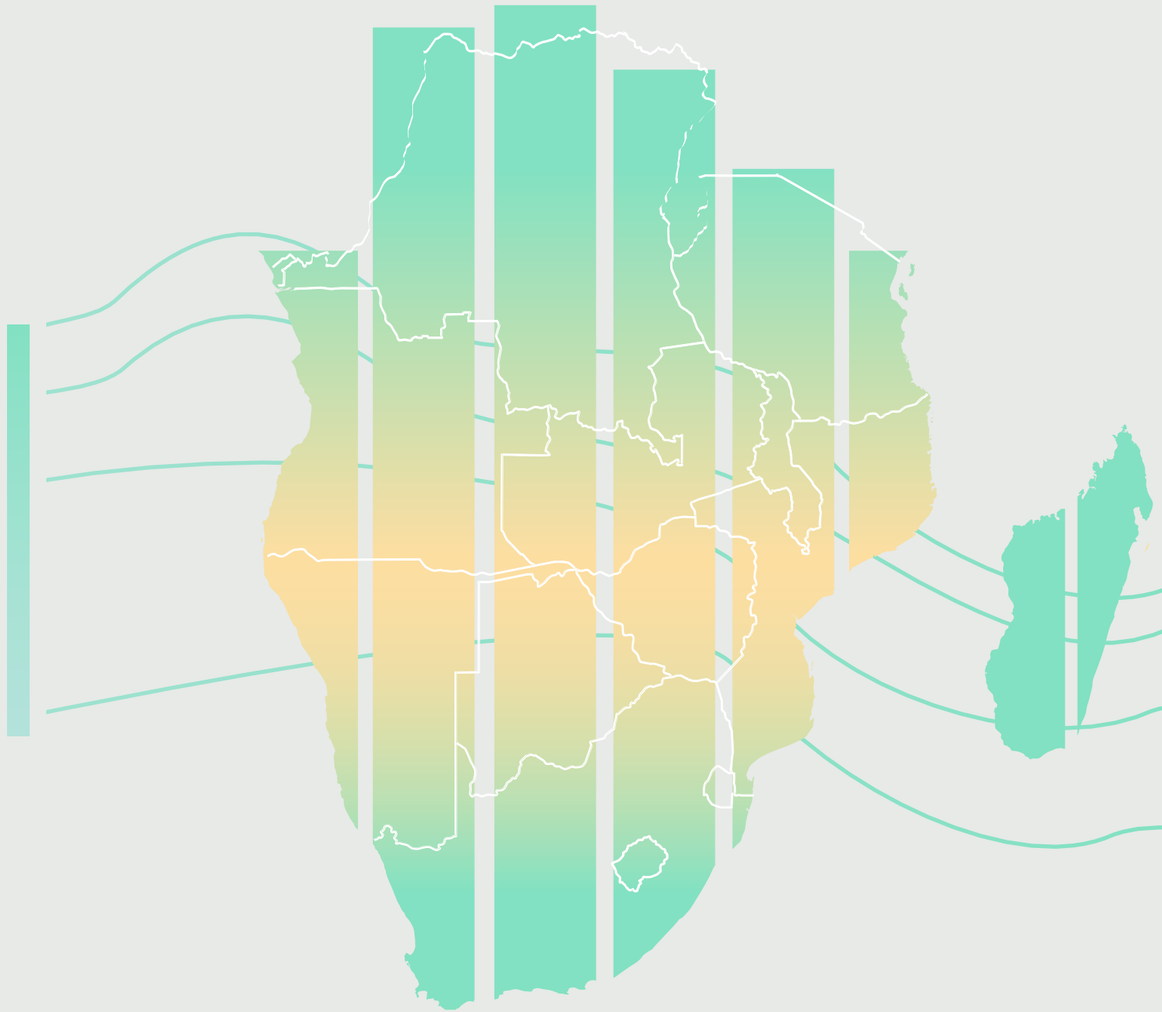


SADC Futures

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).

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.

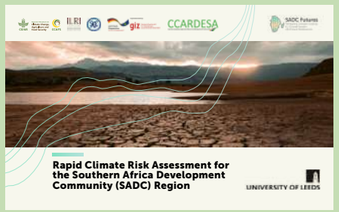
INPUT

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

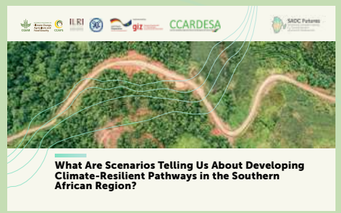
Systems Analysis and Sectoral Linkages Impacting Climate Resilient Development in the SADC Region

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: Felix Clay, Duckrabbit, 2012

CONTENTS

Figures and Tables

ACRONYMS AND ABBREVIATIONS

ACCRA	Adaptation to Climate Change in Rural Areas
ASR	Aquifer Storage and Recovery
BAU	Business as Usual
BMZ	German Federal Ministry for Economic Cooperation and Development
BRICS	Brazil, Russia, India, China, South Africa
CCAFS	Climate Change, Agriculture and Food Security
CCARDESA	Coordination of Agricultural Research and Development for Southern Africa
CGIAR	Consultative Group for International Agricultural Research
COMESA	Common Market for Eastern and Southern Africa
CSR	Corporate Social Responsibility
EAC	East African Community
ESA	East and Southern Africa
FANR	Food, Agriculture and Natural Resources
FAO	Food and Agriculture Organisation
GDP	Gross Domestic Product
GHG	Greenhouse Gas
GIZ	Deutsche Gesellschaft fur Internationale Zusammenarbeit
ICT	Information and Communications Technology
ILRI	International Livestock Research Institute
IPCC	Intergovernmental Panel on Climate Change
LMIC	Low and Middle Income Countries
MAR	Managed Aquifer Recharge
R&D	Research and Development
SADC	Southern African Development Community
SDG	Sustainable Development Goal
SSA	Sub-Saharan Africa
SSP	Shared Socio-Economic Pathway
SSS	Stratified Societies
TSS	Towards Sustainability
USD	United States Dollar
WIO	West Indian Ocean

Photo: Axel Fassio (CIFOR)

Introduction 01

The Southern African Development Community (SADC) is a regional economic institution consisting of 16 member states (see map below), with the objective of achieving regional integration and poverty eradication in the region through economic development and ensuring peace and security (SADC website).

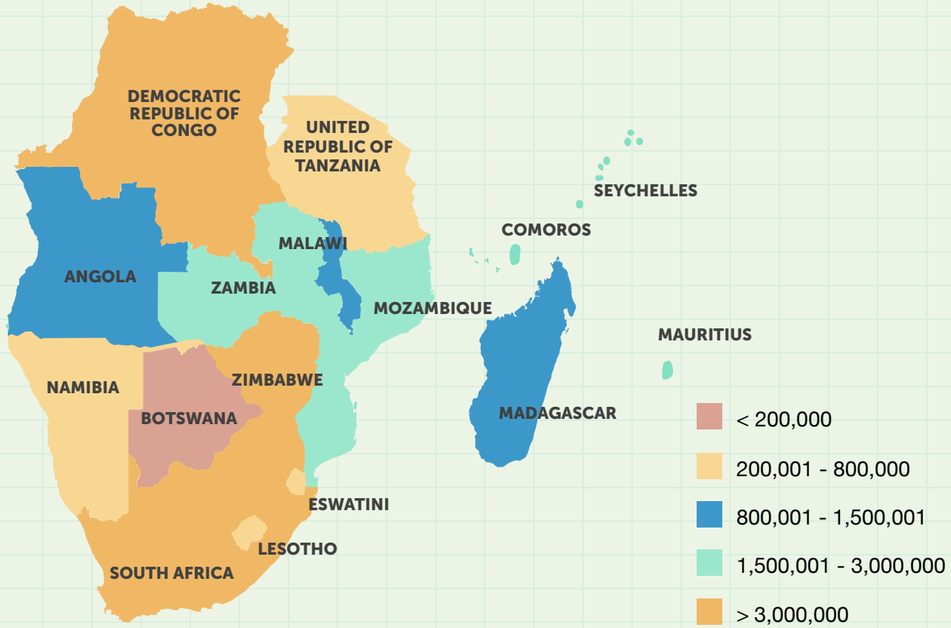
MAP OF THE SADC REGION

In 2018, the total population of SADC was estimated at **344.8 million inhabitants** across the 16 member states, accounting for **32% of the sub-Saharan African (SSA) population** and **4.5% of the world population** in that year (World Bank, 2019). Further, at its current growth rate, the SADC population is projected to reach **947.3 million persons by 2065** (UNDP, 2017 cited in SADC, 2020).

Poverty remains one of the greatest challenges in the SADC region, with approximately half of the population living on less than $1 a day. About **70% of the region's population depends on agriculture for food, income, and employment, which relies on the right amount of rain at the right time** (SADC, 2019). The distribution of risk to food and livelihood insecurity in the region in 2019 is shown below.

MAP OF POPULATION AT RISK OF FOOD AND LIVELIHOODS INSECURITY IN 2019

(Source: SADC, 2019)



The predicted **impact of climate change on precipitation, temperature and the increased frequency and intensity of droughts and floods in the SADC region** are likely to negatively affect the availability of water resources and the agricultural sector with significant impacts on low income and subsistence farmers (Davis-Reddy and Vincent, 2017). On-going and predicted changes in the region will largely be attributed to long-term change in rainfall rather than to short-term effects like floods and droughts, with the region seeing medium to long-term effects from climate change, as well as high impact events. The effects include the loss of land areas suitable for cropping as well as loss of productivity on lands in production. Due to the high numbers of very poor people dependent on rainfed agriculture in the region, the impacts of climate change will play a critical role in any economic development strategy aimed at eradicating poverty. To that end, it is necessary to identify climate-resilient pathways of economic growth for the region.

As defined by Denton et al. (2014) in the IPCC fifth assessment report:

CLIMATE-RESILIENT PATHWAYS INCLUDE STRATEGIES, CHOICES, AND ACTIONS THAT REDUCE CLIMATE CHANGE AND ITS IMPACTS. They also include actions to ensure that effective risk management and adaptation can be implemented and sustained (high confidence, medium evidence, high agreement).

Adaptation and mitigation have the potential to both contribute to and impede sustainable development, and sustainable development strategies and choices have the potential to both contribute to and impede climate change responses.

From the IPCC definition of climate-resilient pathways it is clear that they closely interact with sustainable development strategies, and they are also driven by the specific nature of climate change impacts and responses encountered. There is considerable uncertainty about how climate change and responses to it will unfold in the future, just as there is uncertainty about some of the **key drivers of sustainable development such as levels and distribution of economic growth, management and scarcity of land and water resources, level of cooperation or conflict between states**, and so on.

How should we go about designing and implementing climate-resilient development pathways when there are so many uncertainties around how the world will unfold in the near future?

Using **foresight techniques** that encompass innovative policy formulation and solution design methods gives us a process of considering alternative possible futures. **Foresight techniques do not predict the future, but rather they generate a process amongst groups of participants to consider trends and drivers of the future and how they may play out**, as well as support medium to long term vision building that can inform present-day decisions and actions (UNDP, 2018).

Scenario building is one of the techniques in the foresight toolbox. **Scenarios are built up through a process of identifying a specific problem/policy issue that frames the future landscape of interest**. These frames are defined by geography, topics, and time frames. Building scenarios requires identifying the key factors we are uncertain about, and that will play a key role in determining what the future will look like.

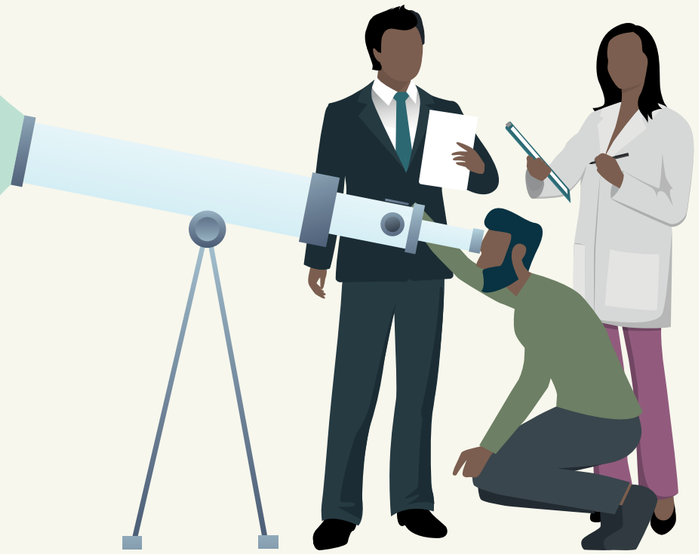
So, for example, one scenario exercise from South Africa was developed to consider potential directions water use in the country could take up to 2050. In this example, a key uncertainty is the impact of climate change on rainfall patterns. Another is the effectiveness of regional water use management. In this case the future landscape of interest is climate-resilient development pathways at the SADC regional level.

Scenarios help us to understand that there are various plausible versions of the future and they may not look very much like the one we have implicitly (or explicitly) in our heads.

UNDP (2018) gives a concise view of the value of foresight in developing strategies:

THE PREMISE OF FORESIGHT IS THAT THE FUTURE IS STILL IN THE MAKING AND CAN BE ACTIVELY INFLUENCED OR EVEN CREATED, RATHER THAN WHAT HAS ALREADY BEEN DECIDED OR ENACTED IN THE PAST BY OTHERS, THERE ONLY TO UNEARTH OR REPLICATE, AND PASSIVELY ACCEPTED AS A GIVEN OR 'GOOD PRACTICE'.

Scenarios can also be used to help identify the key features of the future we want, and necessary actions to get there. This involves a process of identifying a preferred future and expanding on its features through a process called "visioning". Then, a technique of "backcasting" can be used to identify key steps and actions needed to get to the preferred future from the present situation. **See the discussion from UNDP manual on foresight to the right.**



VISIONING AND BACKCASTING: TEXT EXCERPT FROM UNDP FORESIGHT MANUAL (UNDP, 2018)

Visioning is a **method for identifying, developing and enriching a compelling, referred future**. Visioning is the first step in creating a powerful strategy of tranformative policy. In foresight visioning is sometimes called "incasting" because it goes in-depth into one particular scenario – which is the contrast to the visioning approach in the conventional strategic planning that focuses on "vision statement". Moreover, visioning in foresight is usually done for period of at least 10 years in the future.

Participatory elaborating and enriching a vision is one of the most effective mechanisms for engaging a team, organisation or community and getting them excited to push forward into new territory. A successfully designed policy, plan, or service should aim to impact the thoughts and behaviours of society and culture, and serve as an example of the mindset and values of its creators – and visioning helps develop that. **Creating a clear and compelling vision is a precursor to strategic planning, and key to creating the conditions to mobilise a group of collaborators around a common policy.**

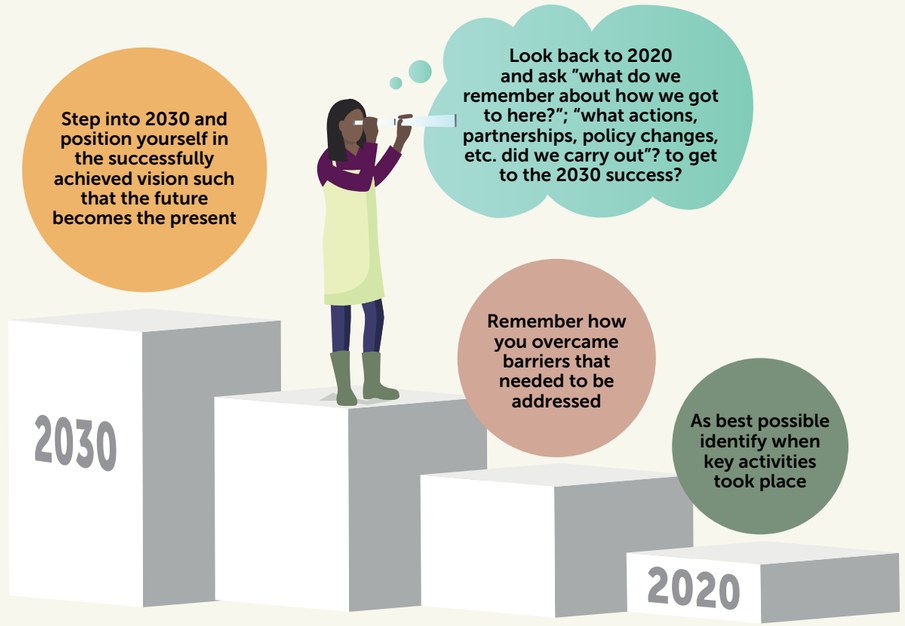
Ultimately, visioning in foresight is not about creating my vision, but about creating a shared vision co-owned by the stakeholders.

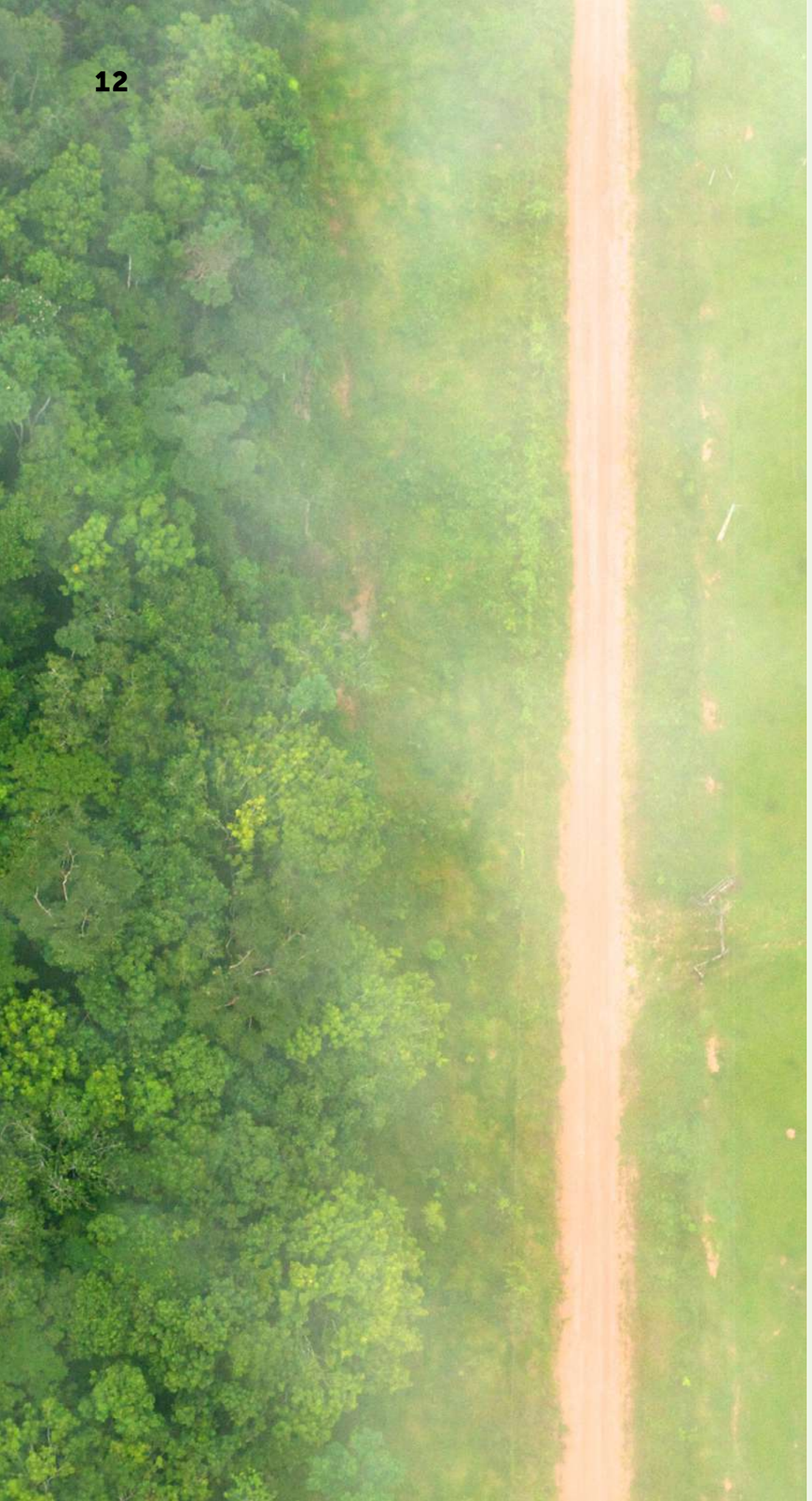
BACKCASTING

This method was originally developed by Robinson (1990) with the intention **to prevent extrapolation of the present into the future that is common in forecasting**. It is closely related to the concept of "anticipatory models" in which insights come from the expected future situation (feed-forward) rather than in relation to expectations (goals / objectives) set in the past (feed-back). There are different ways to apply backcasting, but **backcasting should never be mere "back-planning" because it does not plan from future to the present, but attempts to understand how a particular future situation might develop**. Backcasting can be used as a very useful addition to visioning, or any other scenario method.

1. The process starts by developing a normative (preferred / desirable or in some cases, idealized) future and then working backwards to identify major events and data points (signals) that generated that future.
2. It leads to identifying a potential trajectory or "how it all might happen".
3. This allows organisations to consider what actions, policies and programs are needed today that will connect the future to the present.

Backcasting reminds participants that the future is not linear, and can have many alternative outcomes depending on decisions made and the impact of external events on an organisation. It focuses on changing the present to try to change the conditions toward creating the desired future.





Scenario Summaries 02

Over the past 10 years there have been a myriad of foresight exercises and scenarios developed that are relevant to consider in the context of building climate-resilient pathways of development in the SADC region. These scenarios consider different pathways for **developing climate-resilient food and agricultural systems relevant for the region**. However, not all the scenarios are developed for the region; most are either at SSA or country level, with a few at regional level, and several at global level.

The aim of this review is to summarize the key points of these scenario building exercises:

1. What were they developed for?
2. What key drivers were identified?
3. What were the key uncertainties, and
4. What are the key features of a “desirable future”?

GLOBAL SCENARIOS

Scenarios considered:

IPCC’s shared socio-economic pathways (SSPs);

Van Dijk and Meijerink (2014): A review of global food security scenario and assessment studies: results, gaps, and research priorities; and

FAO (2018): The future of food and agriculture – Trends and challenges. Rome, Italy: FAO

IPCC SSPS

The most well-known and well-used scenarios related to **climate-resilient development pathways at the global level** are those used by the Intergovernmental Panel on Climate Change (IPCC).

They have developed a **set of 5 "shared socio-economic pathways"** (SSPs) that delineate different pathways of development and their associated resilience to climate change.

The SSPs look at five **different ways in which the world might evolve in the absence of climate policy and how this would affect achieving climate change adaptation and mitigation**. Essentially, the SSPs are scenarios designed to help understand how socio-economic factors will affect the global community's capacity to undertake climate change adaption and mitigation actions. These are intended to span the range of plausible futures.

THE MAJOR FEATURES OF THE SSPS ARE AS FOLLOWS:

SSP 1 a world of sustainability-focused growth and equality;
SSP 2 a "middle of the road" world where trends broadly follow historical patterns;
SSP 3 a fragmented world of "resurgent nationalism";
SSP 4 a world of ever-increasing inequality; and
SSP 5 a world of rapid and unconstrained growth in economic output and energy use.

KEY DRIVERS IN THESE SCENARIOS INCLUDE:

Population growth and distribution.

Education levels.

Patterns of urbanization.

Economic growth and distribution.

Scale and structure of future energy supply.

Levels of climate change.
(Riahi et al., 2017)

One of the **principle uncertainties** these scenarios address is the **degree of socio-economic challenge the world would face for mitigating and adapting to climate change**.

In **SSP1**, the challenge to both adaptation and mitigation are low, while in **SSP3** they are both high. In **SSP5**, there are high challenges to mitigating climate change but not for adaptation, while in **SSP4** the opposite is true. **SSP2** represents intermediate socio-economic challenges to adapting and mitigating climate change.

Each of the **SSP scenarios** include **land use changes** that arise from changes in agricultural and industrial demand in response to the assumptions of drivers in each respective scenario. For example, high population growth coupled with low agricultural productivity and limited environmental protection results in a large expansion of agricultural area in SSP3, compared with that of SSP1 where a sustainable transformation of agriculture reduces land use expansion. Other factors that come into play include patterns of dietary transitions and food waste.

12 GLOBAL LEVEL SCENARIOS RELATING TO FOOD SECURITY.

In a study from 2014, Van Dijk et al. summarize the main features of 12 global scenarios related to food security. They find that key drivers common across all these scenarios are population growth, economic development, and technological change. Other important factors that often characterize a scenario are assumptions on policies (e.g., trade and environmental policies) and institutions (reinforcing markets or dealing with market failures, strong governance at global, national, or decentralized levels).

They **classify scenarios into "families"** based on the key assumptions and narratives associated with each (Van Vuuren et al., 2012). This study proposed a typology of six scenario 'archetypes' or scenario 'families' which are determined by assumptions on the future developments of five key drivers: economic development, population growth, technology development, trade, policies, and institutions. These five scenario families and the assumptions they include on those drivers are detailed in Figure 01.

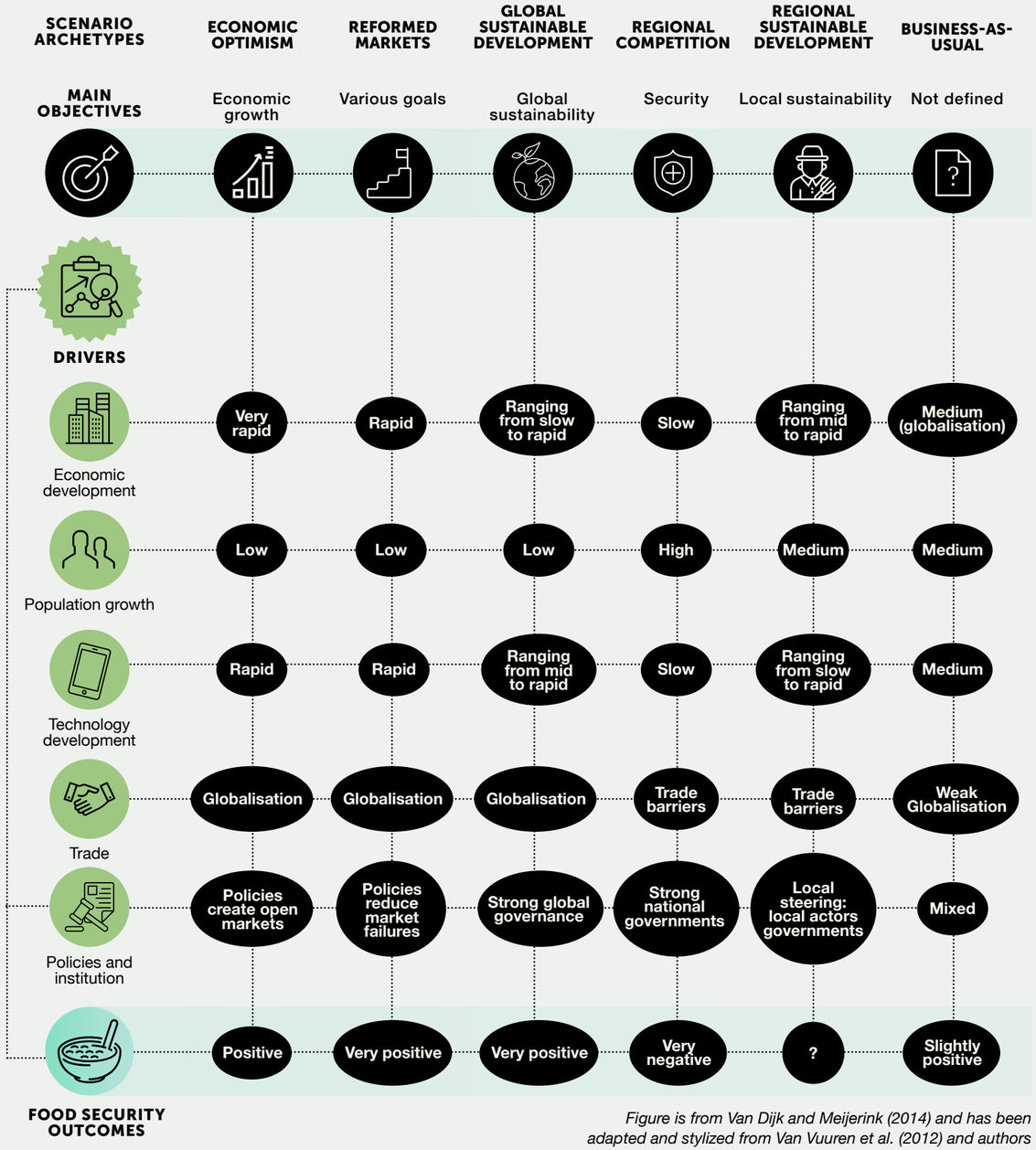


Figure is from Van Dijk and Meijerink (2014) and has been adapted and stylized from Van Vuuren et al. (2012) and authors

FIGURE 01: FIVE SCENARIO FAMILIES

Van Dijk et al. (2014) critique the way in which these global scenarios have dealt with food security because they do not include drivers related to two key dimensions of food security: **food utilization and stability**. Instead they are mostly focused on f**ood availability (e.g., production) and access (e.g., income and distribution)**. They note that three other key drivers can be expected to have important impacts on food security:

- **Climate change**;
- The increasing use of **bio-energy and biomaterials**; and
- Shifts in **diets and consumer preferences**.

They conclude that at the time of their publication (e.g. 2014) these i**ssues were being raised in the scenarios but only dealt with on a superficial level**. They also pointed out that new drivers or new interpretations of existing drivers were being considered in global scenarios. These include: alternative sources of food supply as in **plant-based meats, new technologies, or issues such as post-harvest losses and food waste** which recent studies have identified as significant. Poverty and equitable development are also being increasingly considered as key drivers of food security in scenarios.

FAO (2018) USED SCENARIOS TO LOOK AT PLAUSIBLE FUTURES FOR FOOD AND AGRICULTURE AT GLOBAL SCALE AND THE IMPLICATIONS FOR FOOD SECURITY

. The scenarios were specifically designed to sketch what the world might look like in the face of specific **"mega-challenges"** to food security in the future considering two main areas:


Photo: Axel Fassio (CIFOR)

Challenges for food access and utilization incorporated into the scenarios by considering different degrees of equity that ensure universal **access to food, adequate food utilization and satisfactory nutrition outcomes under adequate education and health conditions**.

Challenges for food stability and availability. They comprise challenges for ensuring sustainable production patterns that allow for–in different degrees and depending on the scenario–**sufficient, nutritious, safe, and stable levels of agricultural food supplies**.

In this exercise, FAO developed three alternative scenarios:

1. Business as usual (BAU)
2. Towards sustainability (TSS), and
3. Stratified societies (SSS).

Key drivers here include:

- Population growth and distribution
- Economic growth and distribution
- Trends in income inequality
- Capital intensity in agriculture (e.g., investments in infrastructure)
- Land quality
- Technologies
- Research and development
- Consumer demand trends for food and non-food items–including bioenergy, and the degree of food loss and waste in food value chains
- Agricultural greenhouse gas (GHG) emissions and mitigation actions
- Crop yields taking into account technical change and climate change
- Cropping intensity
- Land and water availability (including effects of land degradation)
- Efficiency and sustainability of livestock production
- Fish production

15 **Figure 2 summarizes the key features of the global level scenarios relevant for agri-food systems described in the sections above.** The table summarizes the main drivers and their key features that these scenarios are built upon, as well as the major uncertainties identified for each driver. The final column indicates some of the features of a desired or ideal future that have been expressed in these scenarios.

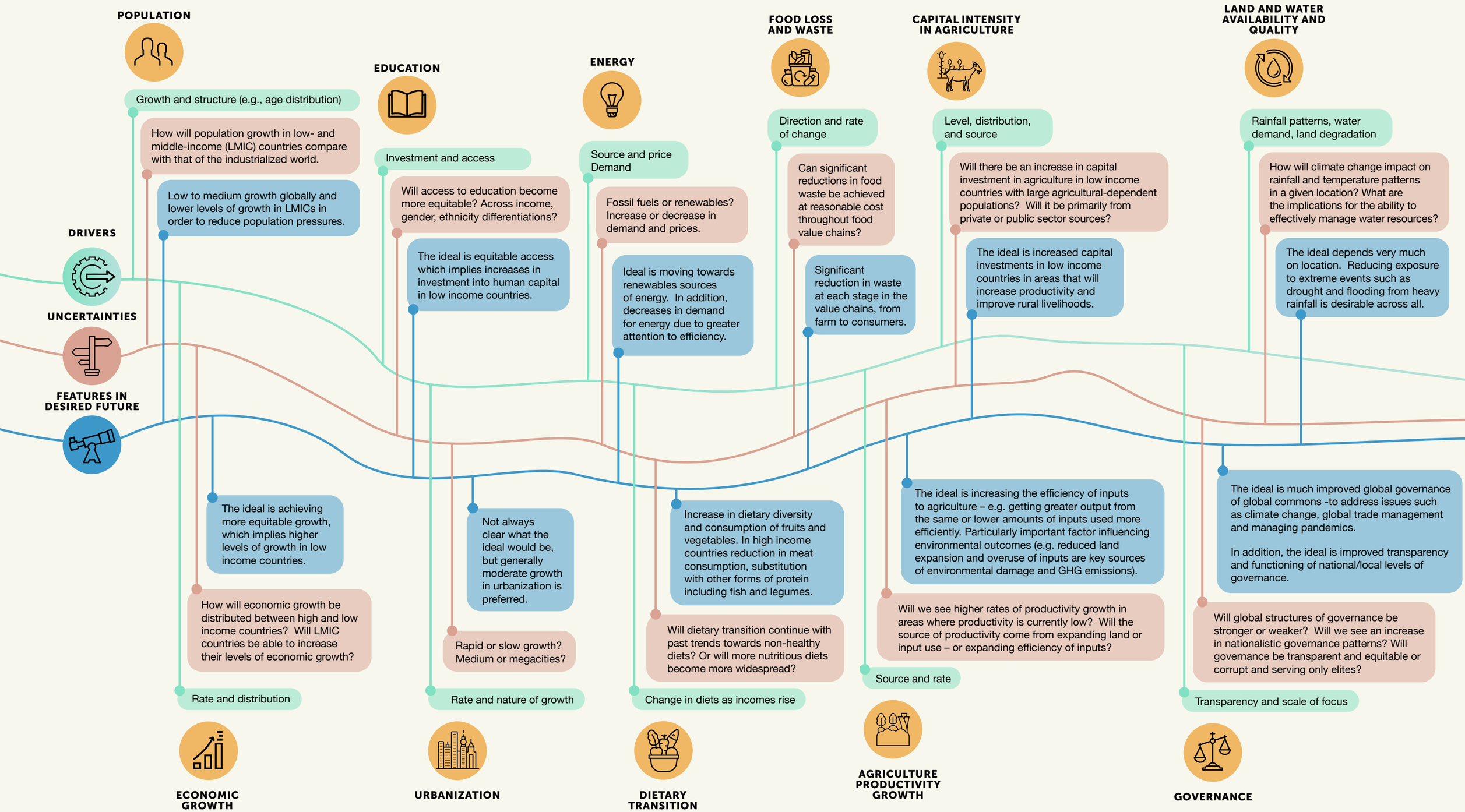
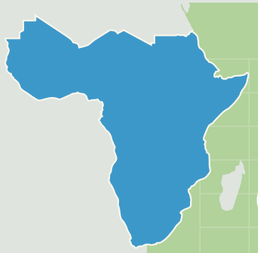


FIGURE 02: SUMMARY OF GLOBAL LEVEL SCENARIOS

SCENARIOS AT SUB-SAHARAN AFRICA SCALE



Scenarios considered:

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Moving to the scale of SSA, there have been **several scenario exercises devoted to issues around agricultural development**. These studies have been developed to consider alternative futures and strategic planning for SSA agricultural production and productivity growth, agricultural research, agri-business, and more broadly food systems and ecosystem services.

The drivers identified in these scenario exercises include those seen at the global scale, e.g., population and economic growth, climate change, trade policies and technology developments. However, there are differences in how these drivers are formulated, making them more specific for the SSA context. For example, the degree to which an urbanized middle class will expand is specific to the nature of economic development as a driver of climate-resilience development pathways in SSA in the future, as is the huge expected increase in youth population and the implications this will have for growth of employment in different sectors of the economy.

At the global level, the progression and impacts of climate change are key drivers. At SSA level the willingness and ability of countries in SSA to undertake adaptation actions is given greater attention. Other SSA specific climate change drivers are related to developments in international climate policy and implementation which will affect availability of financing.

A fairly consistent set of drivers associated with megatrends in the SSA context emerges from this set of scenarios. These include:

DEMOGRAPHIC TRANSITION
Population triples by 2050, huge increase in youth population entering the work force.

SOURCE AND LEVEL OF ECONOMIC GROWTH
Overall growth is moderate, service sector is increasingly important as are the agricultural and mining sectors, industrialization less so.

GLOBAL ENERGY AND FOOD PRICES/MARKETS
Generally upward trends and possibility of increased volatility.

GOVERNANCE
Ranges from highly centralized to more local control; increases in transparency but still high levels of corruption.

GLOBAL DEMANDS FOR RESOURCES
A declining ability to meet the demand for food and agriculture products as well as biomass-based products (implying greater demand for African sources).

LAND TENURE
Much land is under customary land tenure, calls for land reform in many countries, process of increasing concentration of ownership by rural and urban elites as well as external investors in several countries.

DEGRADATION/DEPLETION OF NATURAL RESOURCES
Water depletion and soil degradation are key concerns.

These broad drivers apply across SSA and various sectors. Moving to the specific issues related to agriculture and food systems, it is useful to consider drivers and uncertainties in three main categories of the agri-food system: **agricultural supply, food demand and agricultural value chains**. Figure 03 gives a summary of these drivers and uncertainties by category from the SSA scenarios reviewed.

Where will food for growing populations and demand come from? Will it be from domestic production or imports?

Where will agricultural productivity growth occur? Will it include small-scale producers or only medium/large commercial enterprises?

Will there be a shift towards more environmentally sustainable agricultural production systems?

Climate change impacts (level of impacts as well as responses)

Quality of land resources (Will land degradation be reversed or continue?)

Availability of water supplies (Will climate change impacts reduce or increase supplies? Will water management infrastructure and institutions improve water management?)

How will productivity growth be achieved? Will it be primarily from:

1. Land expansion;
2. Increased crop intensity; or
3. Yield enhancing technologies/inputs?

Source/level of investments in agriculture (Will it increase from current levels? How much will private vs. public investment be? What will be the main areas of investment? Export related or domestic?)

Will dietary transformation associated with higher incomes follow along lines of the past (demand for processed foods) or to a more nutritionally sound trajectory?

Changing consumer perceptions of agriculture: Will there be growth in demand for sustainably grown and/or local production? Will attitudes towards biotech shift or not?

Will the urbanization and the development of middle class continue and be equitable?

Will there be provision of income support/safety net schemes to urban poor driving food demand and food security amongst this group?

Will there be much expansion in demand for non-food biomass products that could compete with food production?

Can food waste be decreased? In SSA what are key nodes of the value chain to target for waste reduction?

Use of ICT in agricultural value chains: will it expand? Will it exclude small producers or enable their participation in these value chains?

Will value chains be labour using or labour-saving? Could agricultural value chains be a critical source of employment for the increasing rural youth population?

In most cases the scenarios at the SSA level give an indication of the features of a desired future. These varied depending on the main focus of the scenario, the drivers and uncertainties, however there are some common themes that emerge. In addition, there are some indicators where divergencies in how the ideal future is viewed start to appear.

FIGURE 03: KEY UNCERTAINTIES ON DRIVERS OF AGRICULTURE AND FOOD SYSTEMS FUTURES IN SSA

Photos (left to right): A'Melody Lee (World Bank) / Neil Palmer (CIAT) / Geraldine Klarenberg (ILRI)

Photo: Jayden Sim-unsplash

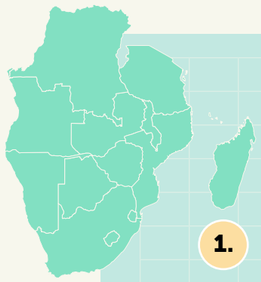
Features of desired future fairly consistent across all studies

1. **Equitable and sustained growth driven by improved market linkages within and external to SSA, good governance, and economic management:**
   - Strong African states that support pan-African collaboration;
   - Strong and well-functioning state administrations; and
   - Regional trade strong and well organized.
2. **High or increased levels of economic growth driven by increases in agriculture and manufacturing sectors:**
   - Development of the agro-processing sector could be the key for launching manufacturing growth;
   - Industrial policy designed to promote private investment and job growth in local non-farm sectors, which simultaneously acts as a stimulus to investment in local agri-food systems;
   - Source of economic growth is based on growth of human capabilities and productivity in Africa and not export revenues; and
   - Increased investments in physical infrastructure (roads, ports, and electrification) to reduce the costs of production in both industry and agriculture and thereby promote competitiveness and job creation.
3. **Social and environmental values embodied in codes and protocols; and**
4. **Increased installed renewable energy capacity – either through development at local level or from centralized state investments.**

Features where divergencies in vision of ideal future occur

1. Africa becomes **food self-sufficient**, and is neither an exporter nor importer of food. Or Africa becomes a net food exporter or net importer but reduces food imports;
2. **Small-scale agricultural producers play a key role** in responding to increased demand for agricultural products, but this depends upon several factors. Some of these raised in the scenarios include:
   - a. Potential **competition from foreign investment** driven agricultural producers (which could push smallholders out of the markets;
   - b. **Developments with land tenure** (e.g. changes that support ability and incentives of smallholders to invest. One aspect raised is the potential evolution from customary tenure to state managed titles);
   - c. Specific means of **bringing smallholders into productive activities** for example, contracts that bundle land concession with processing could be a potential means of stimulating agricultural growth for smallholders; and
   - d. **Increased investments in agricultural research and development (R&D)** that are scale-neutral, support agricultural extension programs, and programs designed to restore long-term soil fertility.

SADC AND SOUTHERN AFRICAN REGIONAL SCENARIOS



Scenarios considered:

1. Quibell G. and Entholzner A., eds., 2016. Building Climate Resilience through Virtual Water and Nexus thinking in SADC – A think 'peace'. Climate Resilient Infrastructure Development Facility.
2. Cawthra G., 2008. Southern Africa: Threats and Capabilities. Africa Program Working Paper Series. International Peace Institute.
3. SARUA, 2012. Building higher education scenarios 2025: A Strategic Agenda for Development in SADC. SARUA Leadership Dialogue Series 3(2).
4. Hichert T., Draper P. and Bertelsmann-Scott T., 2010. What Does the Future Hold for SACU? From Own Goal to Laduma! Scenarios for the Future of the Southern African Customs Union. Occasional Paper No. 63. Johannesburg, South Africa: South African Institute of International Affairs.

At the regional level, the scenarios we see that have the same drivers as at the global and SSA level are important, but with an increasing level of specificity to the conditions in the SADC region. In addition, drivers specific to the SADC region are identified, with the main focus on regional integration and coordination for investment, food supply, water and energy management.

Regional integration

- Will it continue? Will it have "teeth"? e.g., investment and enforcement capacities and will regional trade expand?

Structure of regional economy/source of growth

- Will industrialization take off?
- Will service sector remain main sector of growth?
- Agriculture growth in both production and value chains as a key driver of economic growth?

Quality of governance–strength of political economy

- Growth in authoritarian states and power of military, elite capture and corruption compared with greater participation and power for civil society.

The key drivers and uncertainties raised in the SADC level scenarios reviewed include the following

Climate change impacts on regional cooperation

- Ability to manage state sovereignty to achieve regional cooperation.
- Will climate change force states to cooperate in terms of water, energy and food supplies?
- Will the strongest economies stay in the SADC free trade zone or go out on their own?

Investment in human capital and educational facilities and technologies in the region

- Will there be a significant increase in human capital underpinned by technological advancements in the region?

Features of desired future consistent across studies

Shift of **food production from water scarce to water abundant** areas and increase in regional food trade.

Improvements in productivity and livelihoods of small-scale farmers, possibly organized around cooperative structures capable of servicing the market needs in the south where better prices are likely to be found.

Better regional management of water resources. Could include development of aquifer storage and recovery (ASR), also known as managed aquifer recharge (MAR), an emerging technology that is increasingly being mainstreamed in water-constrained parts of the world.

Mapping of new energy sources in the region, specifically those involving low grade heat sources such as those found along the southern-most extremity of the Great Rift Valley as it intersects the Caprivi Strip, and trading in the difference between average and firm energy to the south.

Development of water management infrastructure. Development of water management infrastructure specifically suited to small-scale agriculture focused on poverty eradication and climate change resilience-building. Focus on low maintenance concepts such as rainwater harvesting, specifically where this might be linked to the production of food or the recharging of localized aquifers.

Expanded water stewardship roles of the private sector, including through Corporate Social Responsibility (CSR), and an increase in the numbers of outgrower schemes could serve as a key driver of rural development.

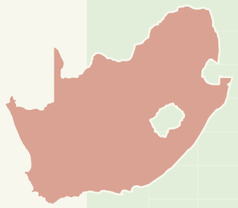
Transport infrastructure that supports regional integration. There are likely to be three major north-south transport corridors, each capable of multiple use for electricity and potentially even water or gas pipelines.

Positive changes in global political economy that could reinforce improvements in SADC political economy.

Inter-regional trade thrives in tariff-free zone.

Effective growth of investment in education throughout the population supported by the development and distribution of latest technologies.

COUNTRY LEVEL ANALYSES



SOUTH AFRICA

Scenarios considered:

1. CST-GRAID, 2017. Report on the Anthropocene Visioning Workshop, 15-18 November 2016, Cape Town, South Africa. GRAID project workshop. Centre for Complex Systems in Transition, Stellenbosch University, South Africa.
2. Scholtz A. and Von Bormann T., 2016. Planning for uncertainty: developing scenarios for risk resilience in the South African agri-food value chain. Cape Town, South Africa: WWF South Africa.
3. GRCF-AFRICAP Scenario South Africa.
4. The Southern Africa Food Lab, Reos Partners South Africa, 2015. The Future of Food in South Africa: Four scenarios examining possible futures of the food system in South Africa.
5. WWF-SA, 2017. Scenarios for the Future of Water in South Africa. Cape Town, South Africa: WWF-SA.
6. Von Bormann T., 2019. Agri-food Systems: Facts and Futures: How South Africa can produce 50% more by 2050. Cape Town, South Africa: WWF-SA.

Photo: Thomas Bennie-unsplash

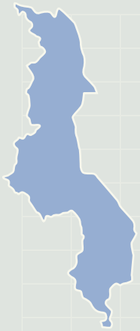
Key drivers and uncertainties

- **Centralization of governance** vs. decentralization to local power.
- Shifts in values towards **ecological concerns**.
- Level of **connectedness of people through technology**.
- The **duality of the current agriculture system**, where large commercial farms produce food for the formal value chain and smallholders are marginalized.
- Uncertainty in land and **agricultural policy** and the resulting decline in agricultural investment.
- The concentration of **power in the hands of a few corporates** and the influence of this on consumer choices.
- **Nutritional trends:** Rate of **stunting/undernutrition amongst low income children**. The ongoing nutrition transition in favor of high-calorie convenience foods and associated lifestyle changes. The impact of this on the **health of the nation** and the development of chronic non-communicable diseases.
- The **impact of the scarcity of resources–particularly arable land and water** and the further risk posed by the decline in water quality.
- The steady **depletion of fishery stocks**.
- The increased variability related to impacts of changes in weather and rainfall due to climate change.
- **Economic growth rates**.
- **Climate change:** How will **climate change impact water and temperatures** and what are the implications for production? What are effective adaptation options? How will **trade patterns underpinning food security** be affected? Will **international efforts** to reduce climate change be effective?

Features of desired future

Accelerated process of land reform, increased certainty of rights for farm dwellers and commercial farmers.

- **Government supported rural development program** with financial and technical support for those receiving tenure rights. Government subsidies/support to small-scale agriculture.
- **Sustainable development of irrigation** in particular the use of groundwater. Increase in consumer awareness of water scarcity/use. Water pricing implemented. Commercialize and widely distribute water recycling/reuse technologies.
- **Decentralization of systems and governance.** Central government's role is one of coordination, but decision-making is at the local level.
- **High levels of connectedness between individuals**, people, nature, and communities facilitated by technology.
- **Shift in values toward more ecological concerns** and away from solely human centered.
- **Business-government engagement**–local, regional, and national collaboration supported by information flows.
- **Diversified agricultural production systems** with strong public support. Robust and functioning land tenure. Skilled agricultural labour force. Private sector investment for broad agricultural growth incentivized by public programs. **Cohesive policy making.**



MALAWI

Scenarios considered:

1. GRCF-AFRICAP scenarios for Malawi; and
2. FAO/EPIC Climate Smart Agriculture Scenario.

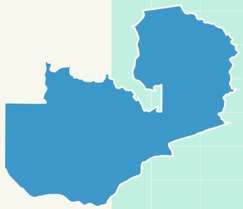
Key drivers and uncertainties

- **Degree of climate risks**.
- Coherence and **quality of policy implementation for food systems outcomes**. Specifically, the adoption of holistic and forward-looking food systems policy making approach or continuing with a disjointed sectoral policy making.
- Degree to which **governance supports and enhances poverty reduction**.
- **Will policy making continue to be captured by the political elite?** Will political support for development be selfish, or nation-state oriented (inclusive and pragmatic)? Will there continue to be endemic institutionalized corruption in Malawian society?
- **The nature and structure of economy** - will it be focused more on **agricultural or technological?** Will it be diversified? What other sectors might **drive the economy?**
- **Regionalism:** Will impetus/control of regional development be through SADC, COMESA or EAC?
- Will **regional development** be effective?

Features of desired future
(Low climate risks, good policy implementation)

- Effective **climate action globally**.
- **Stable global food prices**.
- Significant **investment in climate-smart agricultural** adaptations and technologies.
- The **increasing use of technology in food systems** more generally has resulted in younger generations continuing to work in agriculture and associated activities.
- **Water-use efficiency** has improved, resulting in the expansion of irrigation and less reliance on rain-fed agriculture. This, in part, is also facilitated by increasing power generation from solar and wind and reduced reliance on hydropower.
- **Malawi imports what is better grown elsewhere and grows what is most efficient to do so domestically**– the trade balance ensures that diets are healthy with adequate supply of both macro and micro-nutrients.
- Small-scale farmers, alongside large-scale commercial cash-crop farmers, have benefited from the broad-based nature of the **policy priorities** and have become increasingly food secure, both from their own production, but also from the improved income-generating potential of their marketable surpluses.
- **Smallholders** in general are recipients of more appropriate and **better financed training**, including on the appropriate use of novel technologies.
- **Emergence of a new middle class** of commercially successful, previously small-scale, farmers.
- **Improved access to and availability of more diversified agricultural production** is resulting in Malawians in general eating a more nutritious and sustainable diet than they have been accustomed to.

Photo: Daniel Mtombosola-unsplash



ZAMBIA

Scenarios considered:

1. GRCF-AFRICAP scenarios for Zambia; and
2. FAO/EPIC Climate Smart Agriculture Scenario Zambia.

Key drivers and uncertainties

- **Climate change:** what will the impacts be? How effective will adaptation be? Will international factors to reduce climate change be effective?
- **Market connectivity and function:** Will Zambia's import and exports of food be part of a regional and international trading system? Will domestic markets function effectively so that demand and supply are responsive? How will demand and supply affect food price and stability?
- **How will commodity prices move?** Will the economy grow, diversify and be sustainable vs. focused only on rapid economic growth?
- **Whether the state (this was changed to include all institutions) could be efficient and implement adaptive policies**, i.e. be adaptive.

Features of desired future

- High and steady **economic growth**.
- **Institutions** that are efficient and highly adaptable.
- **Low climate risk**–global action to manage climate change was effective.
- **High market connectivity**–national food system connected to regional and international markets.
- Extensive use of **conservation agriculture**.
- **Participatory management of forests**.
- Improved **irrigation infrastructure**.

TANZANIA

Scenarios considered:

1. GRCF-AFRICAP scenarios for Tanzania.

Key drivers and uncertainties

- **Technological** impact relating to the extent to which technological change will shape the Tanzanian food system, through the development and adoption of new technologies and the impacts they will have on agriculture, food, processing, employment, markets.
- **Climate risk** relating not only to the severity and frequency of climate change impacts, but also the exposure and vulnerability of agriculture and other food system components, actors, and infrastructure.
- **Market development** was a close third in terms of uncertainties identified.

Features of desired future

- **Technofix Scenario** (technological transformation and low climate risk).

This scenario sees Tanzanian agriculture transformed by the development and adoption of **pro-poor technologies, underpinned by substantial public research and development (R&D) and investment**. Farmers have adopted new crop varieties with traits that increase resilience to climate change, whilst R&D for traditional and orphan crop varieties has helped increase crop diversity and dietary diversity. Supported by international climate finance, other technologies such as irrigation, early-warning systems and improved weather forecasting have been widely adopted. Increased yields have reduced tensions over land, helped stop deforestation and have supported reforestation in targeted areas whilst facilitating agricultural exports. **Climate impacts have not been as pronounced as originally feared**.

SEYCHELLES

Scenarios considered:

1. Seychelles Department of Economic Planning, 2019.

Photo: Ian Badenhorst-unsplash

Key drivers and uncertainties

- The country's **resilience to climate change** and other external factors.
- **Socioeconomic** transformation.

Features of desired future

The Garden of Eden is the best-case scenario. Here, the economy has been transformed through diversification and is enjoying a stable growth trajectory. Growth is inclusive and sustainable, with the Seychellois people placed at the center of all development efforts. **Seychelles is a unified nation in which citizens have been able to overcome political, religious, and social divides**. Moreover, the country has become resilient to the adverse effects of climate change by taking all necessary measures to minimize damage to property and to safeguard lives.

The government is democratic, transparent, accountable and practices sound governance, with the interests and wellbeing of every citizen at the core of government policy. The three branches of government (executive, legislative and parliamentary) work efficiently to ensure the smooth running of the country.

The Seychellois people have **high levels of trust in government institutions** to deliver on their respective mandates and to ensure the highest possible levels of public service delivery. Because citizens have been placed at the center of development, they are **active participants in the development process**. Seychellois are engaged in the productive sectors of the economy, with a large year on year increase in the number of locals employed directly and indirectly in tourism, fisheries, the financial sector as well as other supporting industries.

Human resources: migration policy carefully moderates ex-patriot labour flows with good relations between migrants and native population. Seychelles becomes a center for knowledge on the blue economy.

National identity: peaceful and harmonious, women's empowerment, strong national identity. Seychellois are in tune with the nation's diverse makeup, with a keen focus on acceptance and embracing the multitude of ancestral backgrounds that has made the country what it is today.

Education and technology: Seychelles has become a tech-savvy nation which exploits the benefits of simple but fit-for-purpose technology solutions. There exists a framework conducive to the development of home-grown technological inventions, and strong investment in creating the necessary technological infrastructure.

Strong private sector: economic transformation has been achieved with considerable success, with greater value-addition in all sectors. The private sector operates unhindered, as government has taken decisive steps to minimize bureaucracy.

Financial sector: the financial sector is sound, allowing for ease of business and it is responsive to the emerging market opportunities with a focus on sustainable, smart savings and investment products for the Seychelles market. Seychelles has also established a niche market in specialized offshore financial services.

Resilience to climate change:

Seychelles has **experienced challenges leading up to attaining the goals envisioned in this scenario** (e.g., rising sea levels, drought, storm surges, abnormally high temperatures and regional conflicts). However, the country was able to adapt due to the **numerous measures taken to ensure resilience** in the face of such climatic and external phenomena and through socioeconomic transformation.

Governance is on par with international norms and best democratic practices. People are indeed at the center of development, allowing them to become the drivers of development. Society is peaceful and a sense of national pride, unity and solidarity prevails. **Science, technology, and innovative ways of solving challenges have been mainstreamed into daily life, acting as a catalyst for development.**

Jobs, income, and investment opportunities are all indicating economic growth and improved performance. The nation remains a champion of climate-smart development, a pioneer in environmental conservation, and a center of expertise on the blue economy. **Resilience has proven to be the essential ingredient for ensuring that Seychelles not only survives but thrives**.

MADAGASCAR

Scenarios considered:

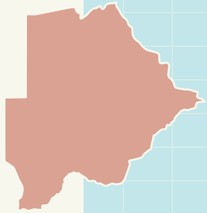
1. Sourisseau et al., 2017.

Key drivers and uncertainties

- Level of **crime/security** in the territory.
- Investment into **agricultural market development**.
- Efficacy of **local institutions**.
- Growth/decline in **inequality**.

Features of desired future

- **Territorial level governance strengthened**, and investment increased.
- **Security issues**–personal safety from crime is enhanced.
- **Inequality is reduced**.
- **Agro-ecology and family-based farming** dominate agricultural systems.



BOTSWANA

Scenarios considered:

1. ASSAR, 2016.

Key drivers and uncertainties

- The extent to which **policy enforcement** affects **water availability**.
- The **impact of climate change on water resources,** in terms of the amount of rainfall.

Features of desired future

- In this scenario, there is **effective policy implementation and more rainfall**, meaning sufficient water availability. Water reforms driven by occurrence of severe drought in Botswana leads to implementation of a **water management reform**.
- **Construction of a large dam and a hydropower station** in Botswana improves water and energy availability. In addition, **alternative farming practices** are implemented, and water scarcity compels bilateral cooperation between Kenya and Botswana.
- By the year 2025, **large dams are being constructed to control flood water** and also contribute to economic diversification and growth of employment.
- By the year 2035, Botswana becomes the **food basket supplying agricultural produce** to other SADC countries.

NORTHERN MOZAMBIQUE CHANNEL

It includes countries in East and Southern Africa (ESA) comprises ten coastal countries bordering the Western Indian Ocean (WIO)–Comoros, France, Kenya, Madagascar, Mauritius, Mozambique, Seychelles, Somalia, South Africa, and Tanzania.

Scenarios considered:

1. Obura et al., 2018.

Key drivers and uncertainties

- Quality of governance.
- Level of investment into the economy.

Features of desired future (where governance is high quality and investment high)

- **Gender and youth employment** supported in government programs.
- **Homes use gas for cooking and solar power for energy**.
- **Restoration of degraded ecosystems**.
- **Investment in green-gray coastal defenses** reduces cost of climate impacts and loss of human life.
- **Affordable high-quality health care** available to all.
- **Natural gas used for electricity generation** and zero carbon emission power plants.
- **Country joins BRICS** as emerging shining light in development pathways.
- One of top countries in **achieving SDGs**, and a leader in climate negotiations.

Analysis 03

What have we learned from this synthesis of scenarios?

First, we can see that from global to national level many of the drivers are the same (e.g., population growth, economic development, climate change) but they become increasingly specific to the context being considered. In addition, we see some new and different drivers arise at local scales–such as the outcomes of land reform or climate change impacts on rainfall patterns. In some cases, the drivers are relatively short lived–e.g., youth bulge in population at SSA level is important up to 2050 but then less so.

A second issue we can see emerging is that as one moves from global to local levels there is an increasing number of drivers that are determined outside the scope and influence of the decision-making level represented. That is, more drivers are exogenous and need to be considered but unlikely to be influenced. That difference is important in using scenarios to help guide strategic planning, as it highlights where planners and decision-makers can have impact. So, in the case of regional planning for SADC climate resilient pathways of development it is key to understand what levers of power and decision-making actually reside at this level.

Photo: E.W. Cordon (ILRI)

CONSENSUS AND DIFFERENCES IN VISIONING AN IDEAL FUTURE FOR SADC

As for the ideal future, analyzing the results of scenarios from SADC to country level in the region we can see there is considerable consensus but also some areas of diverse opinions. The main areas of consensus are the following:

- Much higher levels of **equality in income distribution** than currently found.
- Improved governance–away from corruption and elite capture of benefits.
- Greater awareness and value given to **conserving and improving natural resource management and environment**.
- Greater **connectivity between people** at the regional level facilitated by technology.
- **Improved productivity and market participation** for small-scale agricultural producers (and thus higher incomes and better livelihoods).
- **Reduction in food imports**–more reliance on domestic production.
- Greatly expanded r**egional level of investment and management** of transport, energy, water use and communications.
- **Increased investment in education and health** of entire population (e.g., better investment across population in human capital development).

Some areas where there are divergent ideas on how an ideal future would look for the SADC region include:

Role of regional government: To facilitate coordinating activities but with decision-making mostly decentralized to local level, or a much stronger centralization of decision-making power at national and regional levels.

Relative **importance of small-scale farming sector to economic growth and food supply**–in one future most food supply and a big source of economic growth is small-scale farmers, in other they are important for their own food supply but larger scale commercial enterprises are more important for supplying urban population and contributing to national economic growth.

The degree to which the region is inward or outward looking. In **one future SADC is a highly effective regional institution whose economic, social, and political connections remain mostly within the region**. In an alternative version, **SADC is an effective instrument for connecting the region to broader networks in SSA and globally for investments, technology, trade etc**.

The nature of the transition to get to the ideal future. In some cases, this was envisioned as highly disruptive and traumatic (e.g., revolution), in other cases a slower, planned and less disruptive transition.

DRIVERS AND KEY UNCERTAINTIES AT THREE LEVELS OF ANALYSIS

In this final section a summary of how some **key drivers and their associated uncertainties are treated in the global, SSA and SADC level of analysis are summarized below**. This analysis indicates the degree to which the uncertainties associated with each driver shift depending on the level of analysis, and also the degree of leverage that decision-makers may have therein.

Comparison of key drivers and associated uncertainties at three levels of analysis

POPULATION

GLOBAL
- Level and distribution of growth

SSA
- Rate of population growth
- Fertility rate in SSA
- Percentage of population under age 24 (youth bulge)

SADC
- Rate of population growth
- Fertility rate in SADC
- Percentage of population under age 24 (youth bulge)

FOOD SOURCE/PRICE

- Food prices in global markets rising or falling
- Global food trade increased or decreased

- Food prices in global markets rising or falling
- Increase in domestic production of food
- Increase/decrease in food imports

- Food prices in global markets rising or falling
- Increase in regional production of food
- Increase in regional food trade versus individual country

GOVERNANCE

- Strong governance of global public goods

- Strong governance of global public goods
- Stability and quality of national governance systems in SSA

- Strong governance of global public goods
- Stability and quality of national governance systems in SADC
- Level and effectiveness of regional governance
- Development of regionally coordinated infrastructure for water, energy, transport, and food sectors

ENVIRONMENTAL

- Level of GHG emissions
- Climate change impacts – rate and distribution
- Water availability

- Level of GHG emissions
- Climate change impacts – rate and distribution in SSA
- Improvements in soil/land resources management
- Management of natural resources in agricultural production systems
- Effectiveness of adaptation actions

ECONOMIC GROWTH

GLOBAL
- Rate and distribution of growth globally

SSA
- Rate and source of economic growth in SSA

SADC
- Rate of growth of industrial sector
- Contribution of agricultural sector to GDP

ENERGY SOURCE/PRICE

- Oil price on global markets
- Rate of shift from fossil fuels to alternative energy sources

- Oil price on global markets
- Investment levels in renewable energy sources
- Development of decentralized or centralized energy transmission systems

- Oil price on global markets
- Investment levels in renewable energy sources
- Regional coordination of energy supplies and transmissions

AGRICULTURAL PRODUCTIVITY

- Global level and source of investment into agricultural R&D
- Level of technologically driven productivity increases

- SSA level and source of investment into agricultural R&D
- Rate of productivity growth in small-scale and commercial agricultural sectors
- Source of productivity growth: technology/efficiency driven or expansion of agricultural land area

- SADC level and source of investment into agricultural R&D
- Rate of productivity growth in small-scale and commercial agricultural sectors
- Sources of productivity growth

- Level of GHG emissions
- Climate change driven change in rainfall/ temperature patterns
- Regional management of water resources
- Improvements in soil/ land resources to reduce degradation
- Management of natural resources in agricultural production systems
- Changes in land tenure systems and their impacts on farmers incentives

IMPLICATIONS FOR DESIGNING CLIMATE RESILIENT DEVELOPMENT PATHWAYS IN THE SADC REGION

How can these insights from recent scenario studies be used in the development of climate resilient pathways in the SADC region? Essentially there are three ways these results can be used:

1.

Identifying key uncertainties outside the scope of influence of the SADC region, but which could have major impacts on the effectiveness of climate resilient pathways in the region.

2.

Identifying key investments and actions that should be included in plans.

3.

Identifying some critical differences amongst SADC member countries that should be considered in developing a regional level plan.

These three potential uses correspond to the different levels of analysis of the scenarios, with global and SSA level falling into the first category, SADC regional level and some country studies in the second and the third coming from the individual country level summaries.

The global and SSA level analyses indicate that direct factors of global food and energy prices and global trading patterns for these are uncertain, and their eventual evolution would certainly have major impacts on the successful design and implementation climate resilient pathways in the SADC region.

Likewise, the strength of global governance, in particular the ability to achieve levels of climate change mitigation to lower levels are uncertain, mostly outside the scope of SADC to influence, and critical to determining the effectiveness of climate resilient development.

Insights on what types of actions and investments are needed comes primarily from the SADC level analysis, as well as some of the country level studies. Investments in regional level infrastructure to facilitate trade in food, energy, transport and water emerges as an essential requirement for effective regional cooperation as well as reduction in risks associated with climate change (e.g. water and energy scarcity), food shortages (e.g. trading agreements and transportation).

The level and targeting of investments into the agricultural sector are another key leverage point in the region, as it will influence not only the availability and price of food and thus the level and costs associated with food imports, but also potentially the quality of rural livelihoods for smallholder producers and associated reductions in poverty and food insecurity.

Investments in increasing efficiency of agricultural production can generate economic, social, and environmental benefits by increasing the returns to farming and improving livelihoods and reducing pressures for agricultural land expansion and improper use of agricultural inputs.

The country level analyses indicate that increasing inclusiveness and reducing inequality are important factors across all countries, indicating the importance of including measures and investments directly targeting these objectives in climate resilient development plans for the region.

Likewise, improvements in governance towards more transparent, coordinated, and effective policies and institutions is clearly a priority across all the country summaries.

However, some major differences in priority issues also emerge from the country level analyses.

Technology is given high priority in Tanzania.

Land tenure is considered a burning issue in South Africa.

High incidence of crime is a major problem in Madagascar.

Investing in coastal impact defenses to reduce climate change impact is a priority in the Seychelles.

While a regional level plan and investments for climate resilient development cannot address every issue facing each of the member countries, the potential impacts of these varying constraints and challenges are important to include in the planning process.

While these summaries are only a selection of those that have been done, focusing only on certain aspects of agricultural food systems and livelihoods, they do provide considerable insights into key building blocks of climate resilient pathways of development for the SADC region. They not only indicate key constraints and uncertainties that plans must address, but also key strengths and opportunities for successfully achieving climate resilient livelihoods in the region.

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