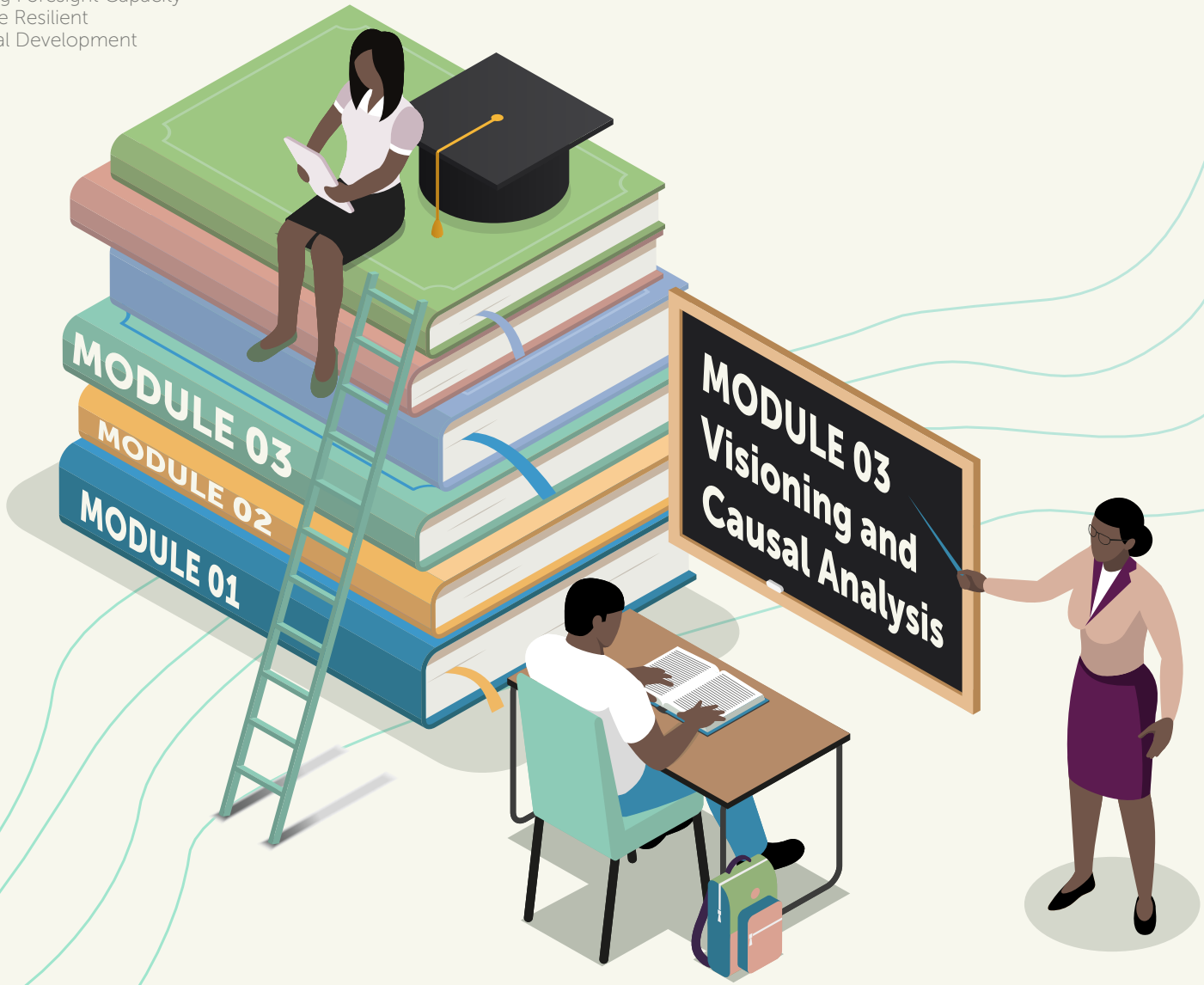
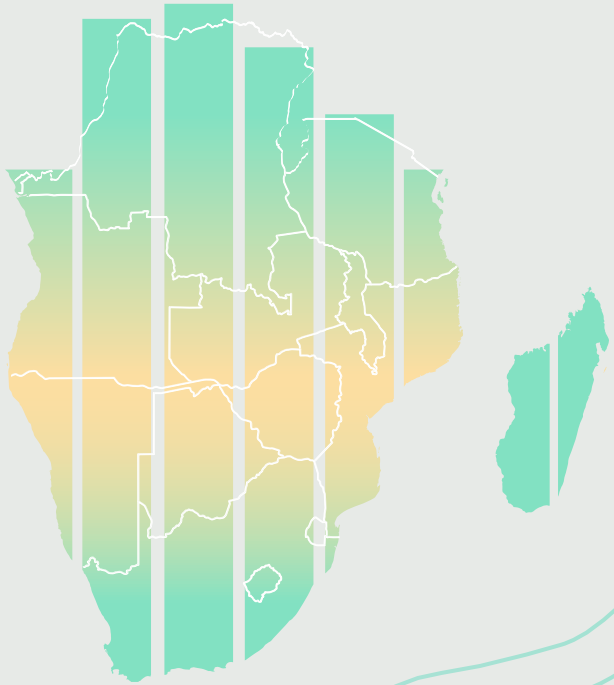
SADC Futures

Developing Foresight Capacity for Climate Resilient Agricultural Development



MODULE 03
Visioning and Causal Analysis

CGIAR RESEARCH PROGRAM ON Climate Change, Agriculture and Food Security
CCAFS
ILRI INTERNATIONAL LIVESTOCK RESEARCH INSTITUTE
Implemented by: giz Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) GmbH
german cooperation
CCARDESA Centre for Coordination of Agricultural Research and Development for Southern Africa



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SADC FUTURES FORESIGHT TRAINING TOOLKIT

The SADC Futures project (https://bit.ly/SADCFuturesForesight) has developed a range of foresight training materials. The SADC Futures Foresight Training Toolkit forms part of this knowledge series and presents content that was given during the SADC Futures webinar series, a six-part virtual webinar series and facilitated training.

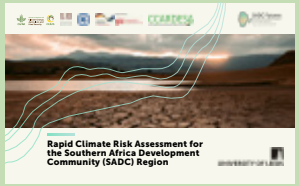
INPUT

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

ANALYSIS

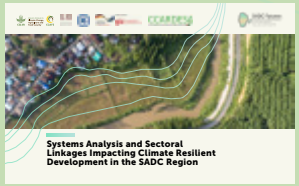
Historical Analysis of Climate Change and Agriculture Related Events in SADC

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

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

SADC Futures Foresight Training Toolkit

The purpose of the toolkit is to provide accessible training to multiple stakeholders on key foresight methods and how and when to apply them.

SADC Futures Foresight Framework

A tailored foresight training framework was created for the project, as a foresight exercise typically includes several methods and tools. The framework brings together the key stages of foresight, with methods and approaches that are relevant to the application for climate resilient agricultural development. This theme was chosen as **climate change poses the greatest threat to the SADC region's agricultural system and therefore technical capacity is needed to address these future impacts and adapt plans, policies, and programs**.

The foresight framework **guides users in the practical application of the chosen foresight tools and methods for innovative strategic planning and policy formulation for climate resilience**. It is important to note that there is no standardised way of doing foresight, the methods and tools presented in the framework were chosen specifically for the theme of climate-resilient agricultural development in the SADC region.

The foresight framework has been built around seven stages that address key questions.

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

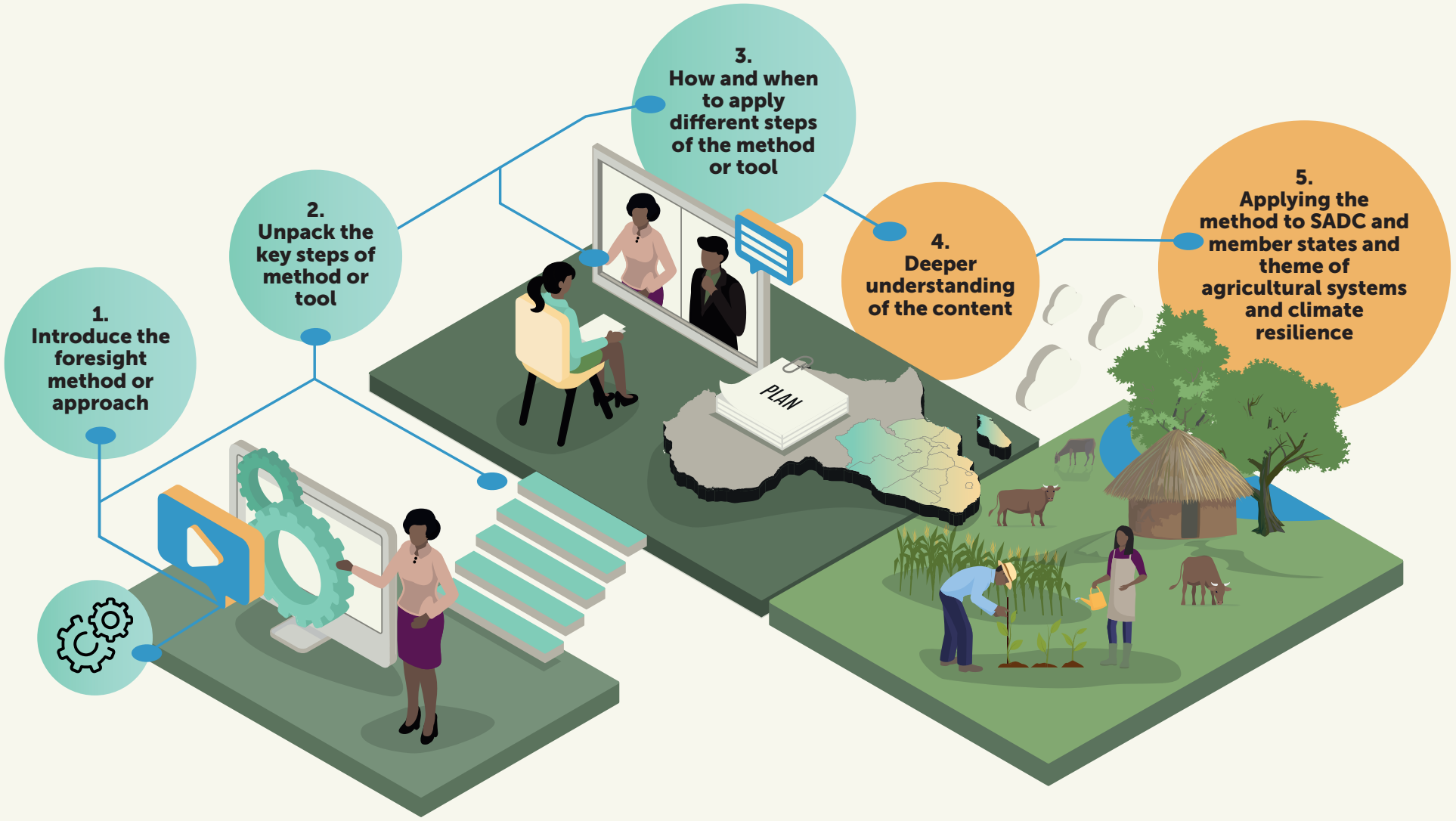
What will we do differently?

- Transforming Climate Resilient Pathways

SADC Futures
Developing Foresight Capacity for Climate Resilient Agricultural Development

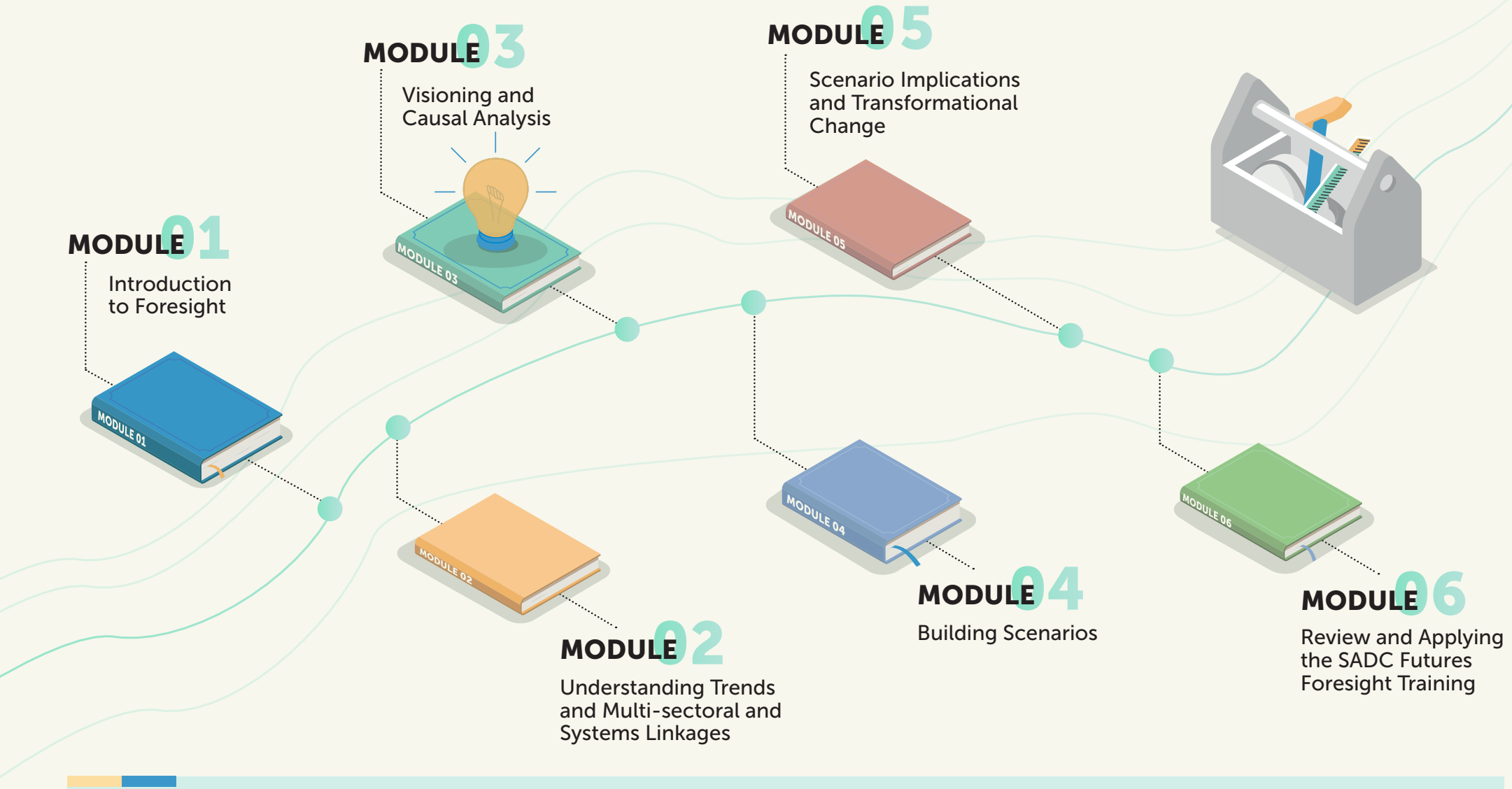
Training approach

The training approach used starts by introducing the foresight method or tool and the key steps to follow in using it. An explanation of how and when to apply the different key steps is provided. The application of the method or tool is then demonstrated in the context of climate-resilient agriculture development in the SADC region.



Structure of the toolkit

The toolkit comprises six modules. **This document presents Module 3: Visioning and Causal Analysis.**



Within the modules, reference is made to the SADC Futures knowledge series supplementary reports (as previously shown mapped to the foresight framework). These reports provide further detail on the use of the foresight methods and tools for building climate-resilient agricultural development in the SADC region.

How to use the toolkit

Exercises, learning reflections and key questions are provided throughout the toolkit modules to equip users to practically apply the range of foresight tools and methods. They are indicated by a variety of icons as illustrated below.

'Test Your Learning' exercises are provided at the start of each module. These exercises test the user's knowledge of the SADC Futures Foresight Training Framework. The exercises are based on information learnt in the preceding modules and provide a refresher for the user before progressing with the next module.

Learning Exercises are included throughout the toolkit modules to provide step-by-step guidance on how to apply the different foresight methods and tools. These exercises are demonstrated in the context of climate resilient agri-food systems in the SADC region.

Further practical exercises are provided to assist the user in applying foresight in the context of their chosen theme as they progress through the training. The materials produced by the user during the exercises are built upon in a sequential manner along the foresight framework.

Learning reflections are provided at the end of each foresight method. These allow the user to reflect on what they have learnt before moving on to the next method.

To guide the thought process of the user **key questions** and answers are highlighted throughout the manual.

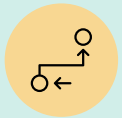
Questions and Answers from participants of the SADC Futures webinar series

'Questions and Answers' are scattered throughout the toolkit to provide an added learning experience. These questions were put forward by participants of the SADC Futures webinar series. The answers to the questions were provided by specialists in the respective fields in question.

Glossary of Key Terms[i]

Foresight

Term	Description
Backcasting 	The process of working backwards from the definition of a possible future to determine what needs to happen to make the future unfold and connect to the present.
Barrier 	Identified obstacle that could stop the achievement of an activity.
Black Swan 	An event that could absolutely not be predicted.
Brainstorming 	A method of obtaining ideas without judgement or filtering. It involves encouraging wild and unconstrained suggestions and listing ideas as they emerge.
Causality 	A logical link between events, where a cause precedes an effect and altering the cause alters the effect.
Complexity 	Complex systems are non-linear and diverse networks made up of multiple interconnected elements. Cause and effect relationships within the system are not easily discernible or predictable. Historical extrapolation is not possible for predicting emergence (new patterns and behaviours) in complex systems.

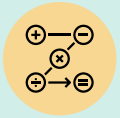
Term	Description
Critical Uncertainties 	Are drivers that are both highly impactful and highly uncertain.
Cross-cutting Issues 	Issues or challenges that affect more than a single interest area, institution, or stakeholder, and that need to be addressed from all points of view.
Drivers 	Are factors, issues or trends that cause change thereby affecting or shaping the future.
Driving Force 	A cluster of individual trends on the same general subject moving trends in certain directions, they are broad in scope and long term in nature (for example, climate change or globalisation).
Evidence 	The integration of raw data constituting numbers, words, images, and insights emerging from diverse knowledge sources.
External Driver 	External force of change, for example political or market drivers.

Term	Description
Feasible 	Possible and practical.
Forecast 	An estimate or best guess of what might happen in the future i.e. not a definitive prediction.
Foresight 	Structured tools, methods and thinking styles to enable the capacity to consider multiple futures and plan for them.
Foresight Organising Group 	A small core group that builds the foresight plan
Foresight Participating Group 	A broad mix of identified key stakeholders that need to be involved
Futuring 	The act, art, or science of identifying and evaluating possible future events.

Term	Description
Grey Rhino 	These are the large, obvious dangers that will sooner or later emerge but whose exact timing is unknown.
Impact 	Refers to the potential scale of impact of a driver on a scenario theme.
Internal Driver 	Internal force of change for example, social drivers within a farm or community directing the decision making of a farmer.
Mega-trend 	A trend that is apparent at a large or global scale e.g. growing youth population across the African continent.
Mind Mapping 	Allows a group's ideas to be charted in logical groupings fairly quickly, even when ideas are given in a non-sequential manner. This technique allows efficient brainstorming for ideas and at the same time creates a skeletal framework for later categorisation of the information generated.
Modelling and Simulation 	The process of creating and experimenting with a computerised mathematical model imitating the behaviour of a real-world process or system over time. Simulation is used to describe and analyse the behaviour of a system when asking 'what-if' questions about the real system and aid in the design of real systems.

Term	Description
Not Predictive 	Participatory with multiple viewpoints, bringing in quantitative and qualitative evidence but not predictive.
Pathway 	A trajectory in time, reflecting a sequence of actions and consequences against a background of separate developments, leading to a specific future situation.
Plausible 	It is reasonable to assume the scenario could happen. Plausibility does not mean that a future situation will happen.
Predictability 	The degree of confidence in a forecasting system based either on law derived from observations and experience, or on scientific reasoning and structural modelling.
Projecting 	A quantitative technique that can be used in the analysis phase of the foresight process. Projecting or time series analysis are used when several years of data are available, and trends are both clear and relatively stable.
Projection 	An expected value of one or more indicators at particular points in the future, based on the understanding of selected initial conditions and drivers.
Resilience 	A system's ability to cope with and recover from shocks or disruptions, either by returning to the status quo or by transforming itself to adapt to the new reality.

Term	Description
Scenarios 	Are storylines/narratives, answering 'what if' questions that describe multiple alternative futures spanning a key set of critical uncertainties. Scenarios identify future drivers of change and then plot out plausible directions that they may take.
Scenario Development 	An approach to understanding highly impactful and highly uncertain drivers and to describe possible future states. Although they address uncertainty, scenarios are not predictions or forecasts - they are not 'true' or correct/ wrong - only plausible.
Social Network Mapping 	A tool to identify the importance and influence of stakeholders as well as how they exchange information or are connected.
Time Frame 	The complete period (past-to-future) considered in a foresight exercise.
Transformation 	An agriculture and food systems transformation is a significant redistribution - by at least a third - of land, labour and capital, and/ or outputs, and outcomes (e.g. types and amounts of production and consumption of goods and services) within a time frame of a decade.
Trend 	A general tendency or direction of a movement or change over time e.g. increasing erratic seasonal rainfall patterns.

Term	Description
Trend Impact Analysis 	Collecting information and attempting to spot a pattern, or trend, and assess its influence from the information.
Uncertainty 	Refers to how much or how clear we are on how a driver will emerge or play out in the future. High uncertainty does not mean 'high improbability', high uncertainty can mean having little knowledge of how something may pan out.
Underlying Cause 	Unpacking why an obstacle is in place.
Unknown Unknowns 	Issues and situations in organisations that have yet to surface and which are blind spots for planners who are unaware that they do not know about them.
Viable 	Able to be done or could occur.
Vision 	A compelling image of a (usually preferred) future.

Term	Description
Visioning 	A well-known prospective technique with a highly participatory approach.
Wicked Problem 	A problem that is difficult or impossible to solve because of incomplete, contradictory, and changing requirements that are often difficult to recognise.
Wild Card 	A low-probability but high-impact event that seems too incredible or unlikely to happen.

Climate Resilience

Adaptive Capacity 	The ability of systems, institutions, humans, and other organisms to adjust to potential damage, to take advantage of opportunities, or to respond to consequences.
Climate Change 	Climate change is a change in the state of the climate that can be identified by changes in the mean and/or the variability of its properties and that persists for an extended period, typically decades or longer.
Climate Resilience 	The ability of a system to 'bounce back' from the impacts of climate-related stresses or shocks. It is the ability of a system and its component parts to anticipate, absorb, accommodate, or recover from the effects of a hazardous event in a timely and efficient manner, including through ensuring the preservation, restoration, or improvement of its essential basic structures and functions.

Term	Description
Exposure 	Refers to the inventory of elements in an area in which hazard events may occur.
Hazard 	A possible, future occurrence of natural or human induced physical events that may have adverse effects on vulnerable and exposed elements.
Risk 	Intersection of hazards, exposure, and vulnerability.
Sensitivity 	The degree to which a system is affected, either adversely or beneficially, by climate variability or change.
Social Vulnerability 	Inability of people, organisations, and societies to withstand adverse impacts from multiple stressors to which they are exposed.
Vulnerability 	The propensity or predisposition of a system to be adversely affected by an event. Vulnerability is a function of a system's sensitivity, and its adaptive capacity.

Agricultural Systems

Term	Description
Agriculture 	Is the science, art, or practice of cultivating soil, producing crops, and raising livestock and in varying degrees the preparation and marketing of the resulting products.
Agricultural Value Chain 	Includes the people and activities that bring a basic agricultural product such as maize to the consumer. The activities include obtaining inputs and production in the field right through to storage, processing, packaging, and distribution.
Biological Diversity 	The variability among living organisms from all sources, including terrestrial, marine, and aquatic ecosystems.
Cross Sectoral Coordination 	The engagement, management, planning and implementation, of activities conducted across different thematic sectors to deliver development outcomes (e.g. food security, nutrition, sustainable landscapes, and agriculture).
Ecosystem Services 	These include provisioning services, such as the production of food (e.g. fruit for humans or grazing for cattle) and water; regulating, such as the control of flooding and disease; supporting, such as nutrient cycles and oxygen production; and cultural, such as spiritual and recreational benefits.

Term	Description
Elements 	The different, discrete elements within a system (e.g. farms, organisations, inputs, and soil).
Interconnections 	The relationships that connect the elements (e.g. rules, ideas, funding, or service relationships, among others).
Land Degradation 	A process in which the value of the biophysical environment is affected by a combination of human land-use activities. It is viewed as any change or disturbance to the land perceived to be undesirable.
Multi-Stakeholder Collaboration 	Consists of a mix of representatives or stakeholders from public, civil, and private domains of society.
Post-Harvest Loss 	Is the loss in quantity and quality of agricultural produce between harvest and consumption. It includes on-farm losses e.g. damage to grain by pests, as well as losses along the value chain during transportation, storage, and processing.
Pre-production 	This stage of the agricultural process is prior to production and may involve land preparation and the sourcing and purchasing of inputs such as seed and fertiliser.

Term	Description
Productive Inputs 	These are used to increase yields and range from improved seeds, genetics, fertilisers and crop protection chemicals to machinery, irrigation technology and knowledge.
System 	An interconnected set of elements that is coherently organised in a way that achieves something (function and purpose). For example, the purpose of an agricultural system could be to produce dairy products and the system could consist of interconnected elements such as the farmer, employees, cattle, machinery, feed, water, and energy.
Systems Thinking 	A mindset, tool, and process that is reserved for complex problems.
Systems View 	Understands life as networks of relationships.
Transboundary Animal Disease 	Epidemic disease which is highly contagious or transmissible and has the potential for very rapid spread, irrespective of national borders, causing serious socio-economic and potentially public health consequences.

[i]Definitions for the glossary were obtained from several information sources (listed below) as well as from specialists in the respective fields.

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Photo: Felix Clay, Duckrabbit 2012

CONTENTS

What You Will Learn 15

Learning Exercise 16

Plan Stage 18

Step 01 Define the Theme 21

Step 02 Set Clear Timeline 22

Step 03 Define the Dimensions 24

Step 04 Define the Descriptors of the Desired Outcome in Each Dimension 26

Step 05 Supporting and Sustaining Elements for the Desired Outcomes 28

Vision Statement 31

Causal Analysis 33

Step 01 Brainstorming Barriers 35

Step 02 Prioritising and Selecting Key Barriers 36

Step 03 Identify the Root Cause 37

Learning Exercise: Barriers and Root Causes 38

Step 04 Consider the Implications off the Barrier 39

Step 05 Categorise the Root Causes and Implications 41

Step 06 Categorise the Stakeholders 43

Backcasting 47

Climate Resilient Pathway Example 1: Agroecological Solutions 56

Climate Resilient Pathway Example 2: Developing Regional Value Chains for Climate Resilient Staples 61

Trade-Offs 64

Learning Exercise 64

References 70

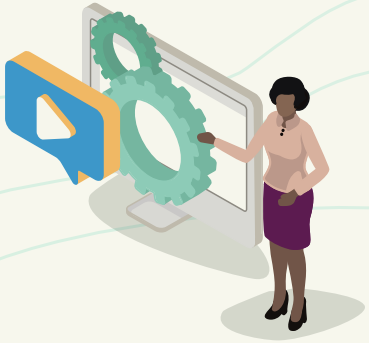
What Will You Learn?

Module 3 covers the **plan stage of the foresight process**. A key focus here is to shift thinking to what might be possible, as opposed to business-as-usual thinking around what is believed to be possible and will occur. The module presents a variety of methods and tools, namely, visioning, causal analysis, stakeholder analysis, backcasting, pathway development, and trade-offs.

On completing Module 3 you will:

- **Understand visioning as a tool within the foresight approach;**
- **Be able to identify barriers and use causal analysis to understand underlying issues;**
- **Understand the concept of climate-resilient pathways as a future planning tool and key steps to developing pathways; and**
- **Be able to identify potential trade-offs.**

Visioning



Causal Analysis

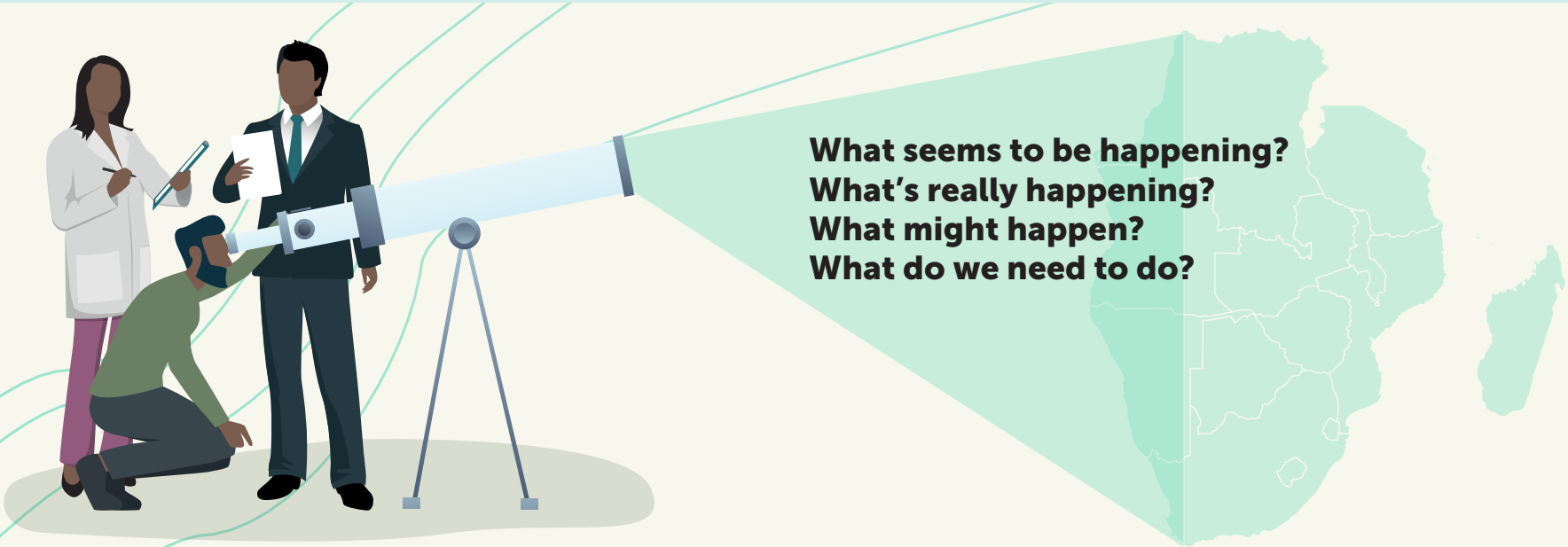
Backcasting

Pathways & Trade-offs

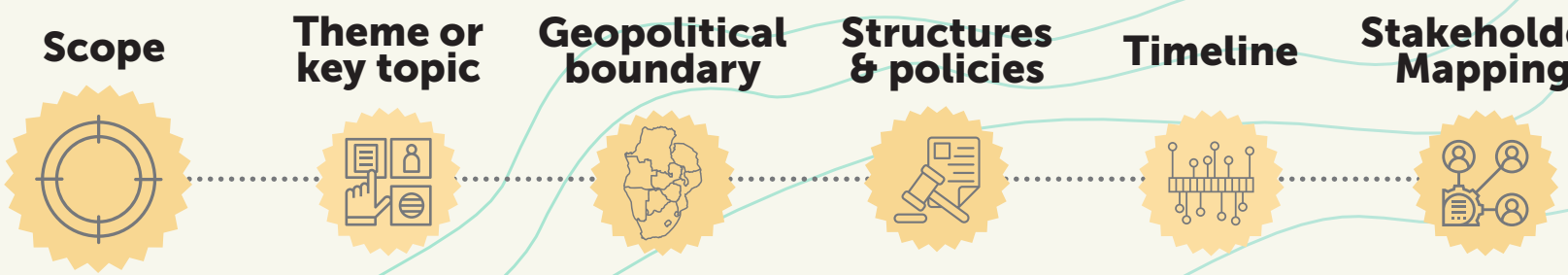
Test Your Learning of the SADC Futures Foresight Framework

Before getting started with Module 3, test your knowledge of foresight and information from the previous module by answering the following questions:

What are the four guiding questions we are trying to answer with a foresight process?



In the scope method what information do you need to define?



What categories could you use for doing horizon scanning?

S Social

T Technology

E Economic

E Ecological / Environmental

P Political

Plan Stage

The plan stage of the foresight process follows on from the interpretation stage. A key focus here is to shift thinking to what might be possible, as opposed to business-as-usual thinking around what is believed to be possible and will occur. It is about shifting the focus and thinking from short term to long term (Conway, 2014). In the plan stage we investigate three key questions:

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

These questions can be answered by applying a variety of methods and tools, namely visioning, causal analysis, stakeholder analysis, backcasting, pathway development, and trade-offs.

Gathering and assessing information

SADC Futures
Developing Foresight Capacity for Climate Resilient Agricultural Development

Visioning

Visioning falls within the plan stage of the foresight framework, it takes place after the situation analysis and interpretation and before the detailed planning and decision making process (European Foresight Platform, n.d.).

Visioning - is a participatory method for identifying, developing, and enriching a compelling, preferred future (UNDP, 2018).

'Clarifying a vision is one of the most powerful mechanisms for engaging a team, organisation or community and getting them excited to push forward into new territory. Creating that clear vision is a precursor to planning, and a key to creating the conditions to mobilise a group of collaborators around a common goal. Ultimately, it is not about creating my vision, but about creating a shared vision' (UNDP, 2018).

What is the method?

- Collaboratively outlining a compelling vision of a preferred future.

Why apply it?

- Visioning a desirable future is the first step in creating a powerful strategy and provides the basis for developing interventions, services, policies, and partnerships that will be required to achieve that future.

The aim of a visioning process is (UK Government Office for Science, 2017):

- Focus groups on what a successful outcome looks like;
- Agree what the current reality is and what therefore needs to be done to deliver success; and
- Set out and prioritise the steps required to achieve the vision.

Strengths of the visioning method (Jackson, 2013):

- It inspires, engages, and enables most people; and
- It is excellent for generating ideas, encouraging interaction, and agreeing on common vision, values, processes, and goals.

Key Steps for Visioning:

- **Define the theme;**
- **Set a clear timeline for the vision;**
- **Define the dimensions of the vision;**
- **Define the descriptors of the desired outcome in each dimension; and**
- **Identify supporting and sustaining elements for the desired outcomes.**

Step 01 Define the Theme

'Define the theme' is Step 1 of the visioning process where the parameters for the vision are outlined. It is necessary to consider for whom and in what situation or purpose the vision is being developed. It is important to remember that visioning in foresight is not about creating 'my' vision, but about creating a shared vision co-owned by the stakeholders (UNDP, 2018).

Learning Exercise

Think of your theme and try to answer the following questions:

What issue are you trying to address?

What is the purpose of undertaking the foresight exercise?

For whom are you trying to resolve the issue?

Use your answers to develop a description of your theme which defines the parameters. It is important to understand that this exercise would normally be undertaken at a table with all members of a foresight organising group, as it is a participatory method. Document your defined theme; this will form the basis for the visioning steps to come. An example of a defined theme is provided below.

Application in the Context of Climate Resilient Agri-Food Systems in the SADC Region

In the case of climate-resilient agricultural development in the SADC region the theme could be explained as:

The SADC Secretariat wants to promote greater climate resilience in agri-food systems in the member countries and integrate climate resilience across sectoral plans.

Step 02 Set a Clear Timeline

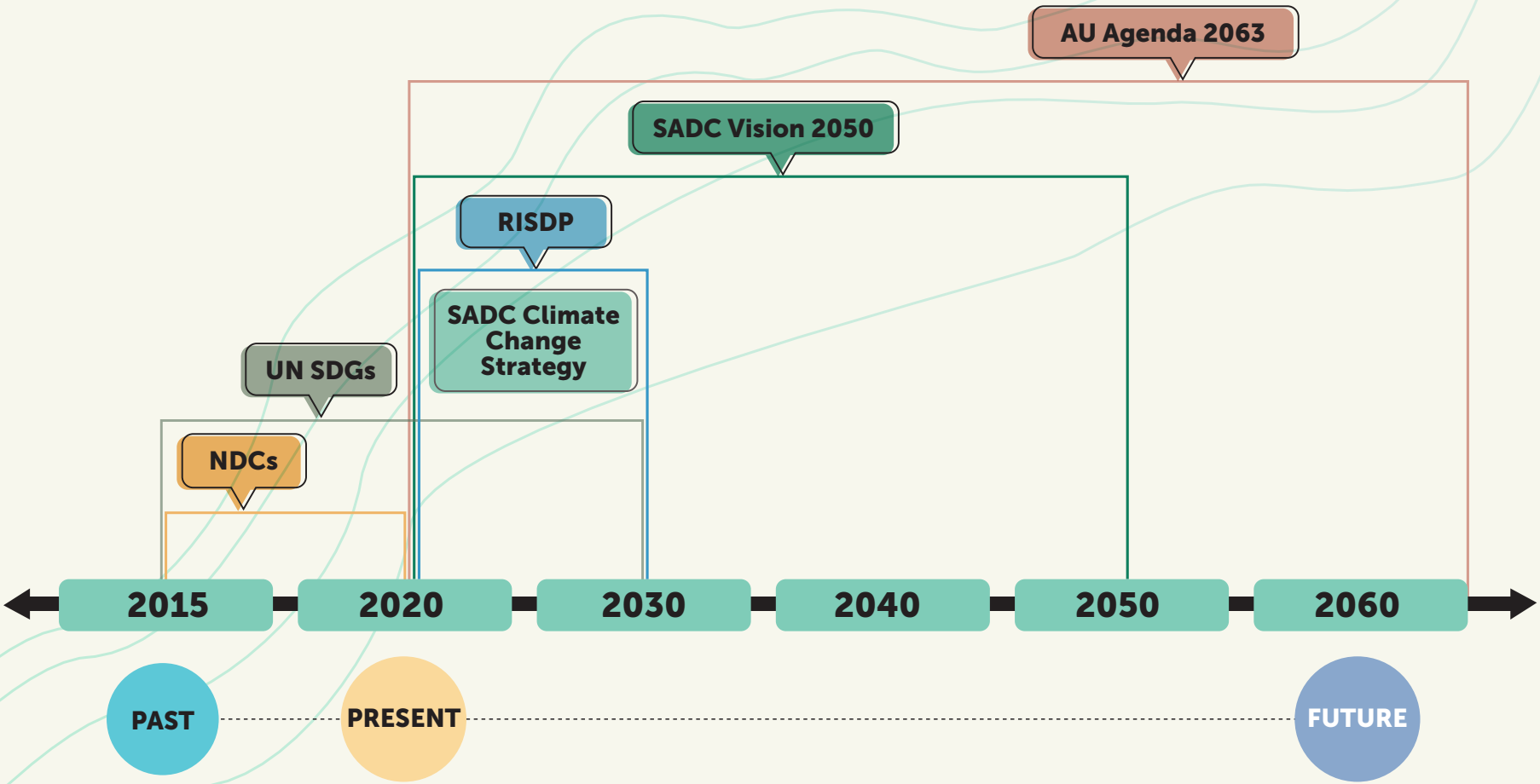
In this step, **a timeline is applied to the vision.** This further denotes the parameters within which the work is intended. To do this, a timeframe from a relevant policy, project, programme, regional or global development goal or strategy can be used.

Learning Exercise

In Module 1 you drew a timeline on a piece of paper, **displaying the different timeframes of various visions, policies, and plans and how they overlap.** You identified which timeframe best suited your theme. The chosen timeframe can now be included as a parameter in your vision.

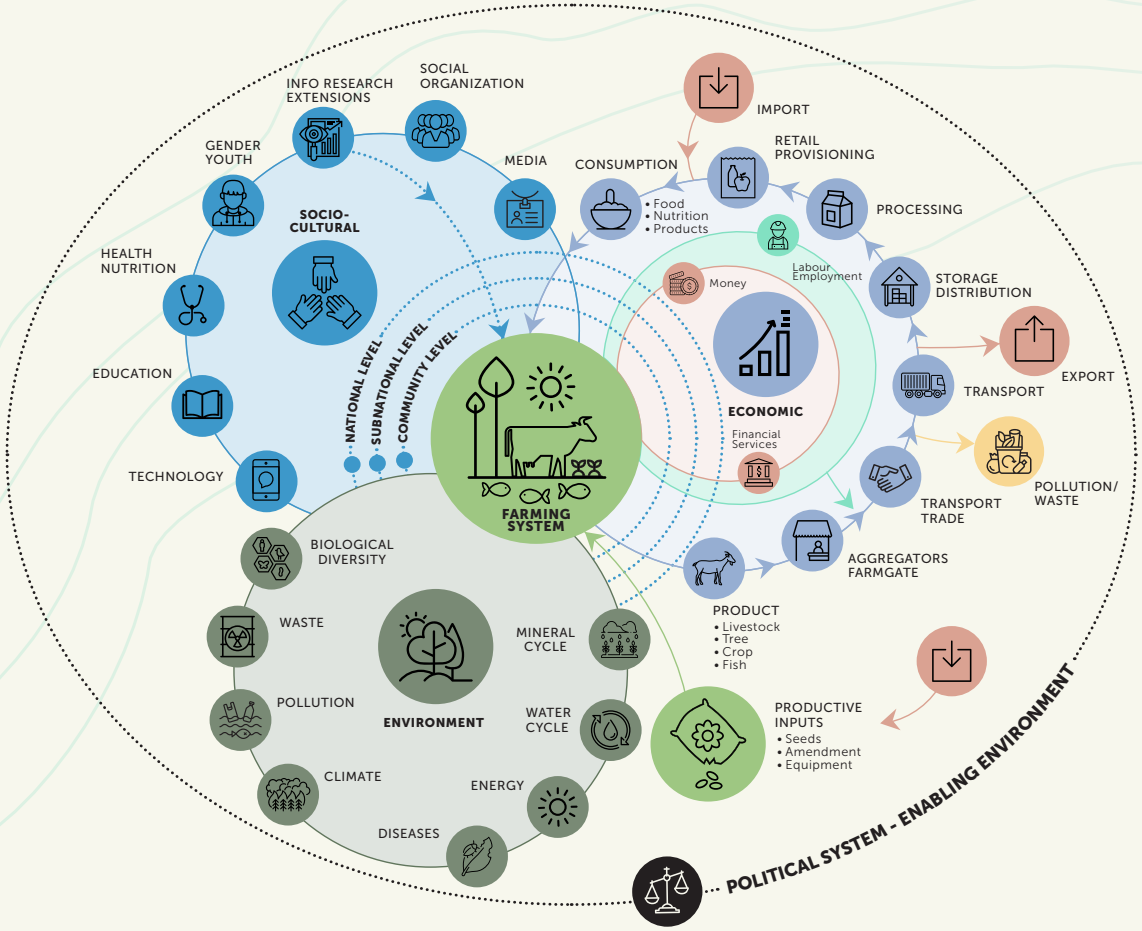
Application in the Context of Climate Resilient Agri-Food Systems in the SADC Region

For the purposes of the chosen theme, 2030 was selected as the preferred end date for the vision timeframe as it is relevant to the Regional Indicative Strategic Development Plan (RISDP) and the SADC Climate Change Strategy.



Step 03 Define the Dimensions

In defining the scope and in systems mapping, we **identified the elements, actors, and relationships in a system.** Essentially, farming systems do not occur in isolation, there are other dimensions that either influence or are influenced by the farming system. Using systems mapping, these connections and relationships are brainstormed and represented visually to fully understand the system. For example, the **diagram below shows that there is a connected environmental dimension which includes biodiversity, energy, and water.** There is also a connected economic dimension which includes value chains for the products, exports, imports, consumption, labour, finances, and waste. The relationships between the different dimensions and the farming system are shown with connecting lines, arrows, and spheres.



Learning Exercise

In Module 2 you grouped the dimensions that influence or are influenced by your system in question according to the **STEEP categories**. You also showed the relationships and connections between them using arrows, connector lines and overlapping spheres. **You now need to unpack the different dimensions further and identify aspects that you feel are important to consider in the vision**. See below for guidance.

Application in the Context of Climate Resilient Agri-Food Systems in the SADC Region

The SADC agri-food systems are complex, consisting of many different interconnected sub-systems and sectors that affect outcomes such as production and food security in the region. The agri-food systems sit within and amongst other environmental, social, political/institutional, economic systems and include elements and stakeholders such as the farm itself, the residents, education, health, biodiversity, energy, water, livestock, crops, and aquaculture. Based on this, the dimensions chosen as crucial to consider for the vision in the context of climate-resilient agri-food systems in the SADC region are listed below.

Within each of these dimensions there are aspects that need to be covered, those that are considered important in the context of the theme are shown in the figure below.

Economic
- Finance
- Investment
- Subsides
- Informal and formal market
- Employment
- Livelihood strategies

Socio-cultural
- Education
- Health
- Nutrition
- Marginalized or underserved groups (women, youth, elders, disabled), cultural identities, diversity, communities)

Agricultural productivity
- Crop, livestock, aquaculture
- Land management
- Supply/value chains
- Food security

Environmental
- Natural resources
- Ecosystem function
- Water
- Land
- Biodiversity
- Energy

Institutional
- Governance
- Government sectors
- Cross-sectoral relationships
- Communications
- Departmental or project units
- Planning approaches
- Multi-stakeholder platforms
- Ways of working
- Allocations

Step 04 Define the Descriptors of the Desired Outcome in Each Dimension

The reason for investigating multiple dimensions is to **ensure that the bigger picture or broader perspective** is considered. In a workshop setting with multiple stakeholders the desired outcomes would be agreed upon and documented.

Learning Exercise

Think about your theme and list the desired outcomes for each of your chosen dimensions. See the figure below for guidance.

Application in the Context of Climate Resilient Agri-Food Systems in the SADC Region

Desired Outcomes

Economic

Private sector and government invest in decent, green employment with a focus on women, youth and marginalized groups.

Socio-cultural

Nationally appropriate social protection systems (health and livelihoods) cover needs of poor, marginalized and vulnerable.

Agricultural productivity

Market-oriented diversified small farms will dominate Southern African agriculture.

Environmental

Energy sources are increasingly based in renewable resources.

Institutional

Climate change measures are built into national policies, strategies and planning. Sectoral plans adequately integrate climate risks and resilience and are clearly linked across sectors.

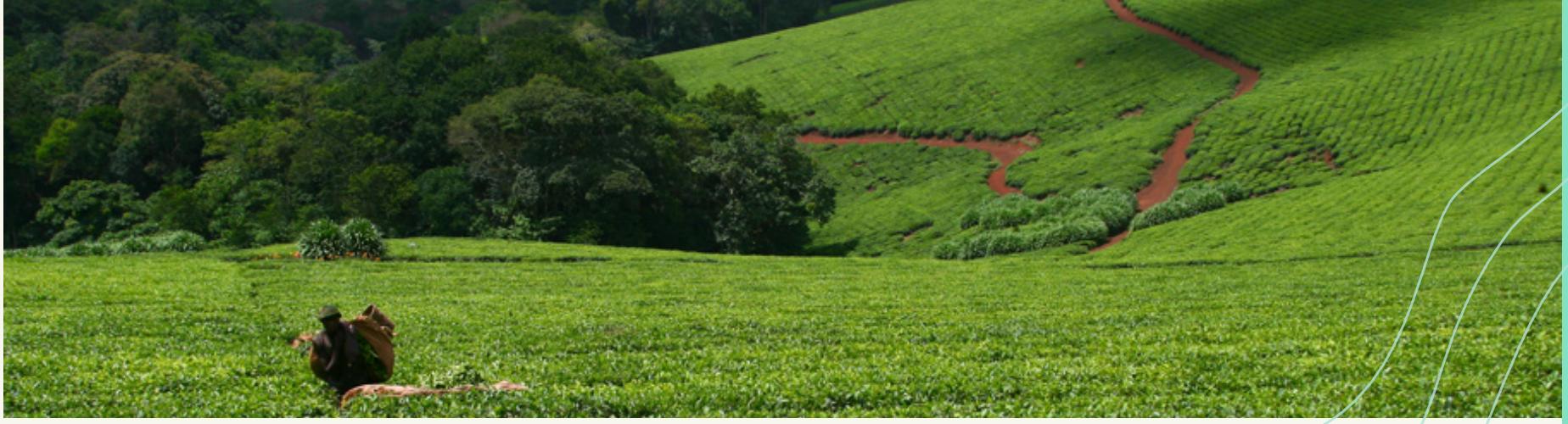
These desired outcomes can be defined in more detail. For example:

Environmental

- Agriculture and natural resources are understood and managed as interlinked system elements in support of enhancing climate resilience;
- Energy sources are increasingly based on renewable resources;
- Sustainable intensification and diversification underpin functional farming and food systems with greater resilience to climate and market shocks;
- Agriculture and natural resources are managed with agroecological approaches for increasing biological diversity, land health, and functioning water cycles to sustain productivity; and
- Agriculture enables adaptive capacity to climate-related hazards and natural disasters in all countries.

Institutional

- Climate change measures are built into national policies, strategies, and planning;
- Sectoral plans adequately integrate climate risks and resilience and are clearly linked across sectors and implemented through transformative, cross-sectoral plans;
- Ecosystem and biodiversity values are integrated into national and local planning, development processes, poverty reduction strategies and accounts; and
- Focused knowledge sharing and systems analysis by regional farming systems will be enabled by the establishment of multi-stakeholder consultative and evidence-based platforms, supported by existing regional and national bodies.



Step 05 Supporting and Sustaining Elements for the Desired Outcomes

In Step 5 of the visioning process we **consider what would need to be in place to support and sustain the desired outcomes of the vision**. The following questions are key:

What are the desired outcomes of the vision?

What supporting mechanisms need to be in place to achieve the desired outcomes?

What mechanisms need to be in place to ensure that the outcomes are sustained in the long term?

Learning Exercise

Consider your list of desired outcomes for each of your chosen dimensions. Now brainstorm and annotate your list with any mechanisms that would need to be in place to support or sustain these outcomes.

Application in the Context of Climate Resilient Agri-Food Systems in the SADC Region

The supporting and sustaining mechanisms relevant to the outcomes identified for climate-resilient agri-food systems in the SADC region are provided as follows:

Economic

Outcomes

- Private sector and government are investing in decent, green employment with a focus on women, youth, and marginalised groups;
- There is full and productive employment for all women, men, and youth;
- Small and medium sized enterprises in value chains that create jobs for young people and women; and
- Sustainable and resilient infrastructure development in developing countries through enhanced financial, technological, and technical support to African countries.

Supporting

- Mechanisms for investments to be focused on climate resilience; and
- Mechanisms are in place to support green jobs and entrepreneurship of youth.

Sustaining

- Thriving local and regional climate resilient livelihoods and businesses.

Agricultural Productivity

Outcomes

- Market-oriented diversified small farms will dominate Southern African agriculture; and
- Sustainable food production systems are based on resilient agricultural practices that increase productivity and are ecosystem based, progressively improve land and water quality, and strengthen capacity for adaptation to climate change, extreme weather, drought, flooding, and other disasters.

Supporting

- Means of enhancing capacities to support highly productive and ecologically sound practices in agriculture; and

  Means of increasing nutrition and food security of the population.

Sustaining

- Resilient ecosystems, functioning water cycles, high biodiversity, and healthy land.

Learning Exercise

Now consider ALL the dimensions and determine 'what' supporting elements are needed. These 'whats' are particularly useful in guiding you to achieve your desired outcomes.

For example, in the chosen context of climate resilient agri-food systems in the SADC region these could include:

- Mechanisms for investments to be focused on climate resilience;
- Mechanisms in place to support green jobs and entrepreneurship of youth;
- Context appropriate social protection systems;
- Means of increasing nutrition and food security of the population;
- Mechanisms to build the information flows and capacity development for farmers and farmers organisations to implement climate smart and agroecological practices; and
- Mechanisms to incentivise and coordinate multi-stakeholder and multi-sectoral efforts.

Learning Exercise

Now consider ALL the dimensions and determine 'what' sustaining elements are needed. These are 'underpinning whats', they are important for sustaining the desired outcomes of the vision.

For example, in the chosen context of climate resilient agri-food systems in the SADC region these could include:

- Thriving local and regional climate resilient livelihoods and businesses;
- Society respects and values the equity, education, and prosperity of all its members;
- Resilient ecosystems, functioning water cycles, high biodiversity, and healthy land;
- An appreciation of systems approaches and the natural resources foundation to underpin agricultural systems;
- Responsive, effective, and trusted government;
- Imbedded willingness to work in multi-stakeholder and cross sectoral platforms; and
- Long term outlooks.

Vision Statement

Using the results from the visioning process (Steps 1-5), a vision statement can be defined.

Learning Exercise

Having completed Steps 1-5 of the visioning process, draft and document a vision statement. This should be continuously referred to as the foresight process unfolds. For your reference, the figure below provides an example of a vision statement.

The figure below describes the vision statement drafted on the culmination of the visioning process Steps 1 to 5.

DRAFT Vision Statement

In the SADC region, we aspire to integrate climate resilience throughout the agri-food system where the government, civil society and private sector are aligned, committed and coordinated for a climate resilient future and opportunities are created for:

- Investments in decent, green employment and climate friendly value chains
- Farming and pastoral systems are diversified to increasing productivity and enhance ecosystem functions;
- All citizens to be empowered, safe and resilient to climate threats; and
- Climate change information and measures are built into cross-sectoral and multi-stakeholder planning, decision making, and investments at all levels and all of this is underpinned by a leadership with integrity and a long term view and sustainable and resilient natural resources.

Learning Exercise

What barriers (identified obstacles that could stop the achievement of an activity) could prevent the achievement of the defined Draft Vision Statement? What are the underlying causes of the barriers i.e. why are the obstacles in place?

Use the set of responses below from the SADC Futures webinar series to guide your thinking.

‘Political resistance, contradicting policies.’

‘Different power and economic interests.’

‘Different interests among stakeholders.’

‘Sometimes the vision is not understood to people implementing it and even to the community the project is working on.’

‘Funding.’

‘Conflict of interest and culture.’

‘Risk adverse farmers and investors.’

‘Cultural beliefs, lack of knowledge, fear of change.’

‘Not having a dedicated implementation team.’

‘Social factors such as poverty.’

Learning

You should now understand the visioning method of the plan stage of the foresight process. You would have followed the key steps and drafted a vision statement of a desirable future. This is the first step in creating a powerful strategy and provides the basis for developing interventions, services, policies, and partnerships that will be required to achieve that future.

Causal Analysis

Causal analysis or root cause analysis is a valuable method used in the plan phase of the foresight process to highlight barriers that prevent the achievement of a vision or desired future state. Causal analysis is particularly useful for identifying how to co-ordinate policy responses to achieve the desired outcome (UK Government Office for Science, 2017).

Essentially, causal analysis **"identifies the driving forces and worldviews underpinning diverse perspectives about the future and what it means to different groups through discussion and deconstruction of conventional thinking. Based on that, causal analysis is able to produce a shared view of possible future outcomes that can break existing paradigms of thinking and operating. It is particularly useful when different groups hold different perspectives on the future of the policy area"** (UK Government Office for Science, 2017).

What is the method?

- A root cause analysis or simple causal analysis is used to understand what issues underpin identified barriers to achieving a desired outcome.
- When a critical look at identified barriers is undertaken, there are often underpinning or root causes that reflect deeper economic, social, cultural, environmental, institutional, and political reasons as well as different world views or behavioural drivers.
- A simple causal analysis asks 'what causes that' again and again until the deeper underlying issues emerge.

Why apply it?

- The root cause analysis is a valuable method to highlight the barriers that keep the group for achieving the vision or desired future state.
- When problem solving, the root cause analysis can be used to check and see if the team is looking at the problem or just a symptom of the problem.

Causal analysis is used to (UK Government Office for Science, 2017):

- Uncover why things are not working today and develop potential and shared solutions;
- Question conventional future thinking;
- Develop shared organisational strategy;
- Explore issues from qualitative perspectives to strengthen understanding of the issue;
- Facilitate multi-cultural dialogue and understanding;
- Gain a better understanding of one's own worldview and ways of making sense of the world; and
- Develop different sorts of products and services and revised policies.

The strengths of causal analysis are that it is (UK Government Office for Science, 2017):

- Collaborative and appealing to a wide range of participants;
- Integrative with other foresight methods;
- Supportive of the development of powerful and richer future scenarios;
- A useful check that constructed scenarios are robust across diverse perspectives;
- Useful for the development of shared visions of a preferred organisational future;
- Useful for issue transformation; and
- A method for linking short, medium, and long-term strategic thinking.

Key Steps for Causal Analysis:

- **Brainstorm the different barriers;**
- **Prioritise the barriers to identify those that are most pressing and select one to three main barriers;**
- **Identify initial causes in a chain of levels to identify the root cause;**
- **Consider the implications of the barrier if it is not addressed;**
- **Looking across the root causes and implications, categorise those that are social, economic, institutional, political, cultural, environmental, etc.; and**
- **Consider the root causes and categorise the types of stakeholders that would have to be involved to solve the underlying causes of the barrier.**

Step 01 Brainstorming Barriers

This **first step in carrying out a causal analysis exercise** could be conducted in a workshop setting with multiple stakeholders where potential barriers are identified through brainstorming.

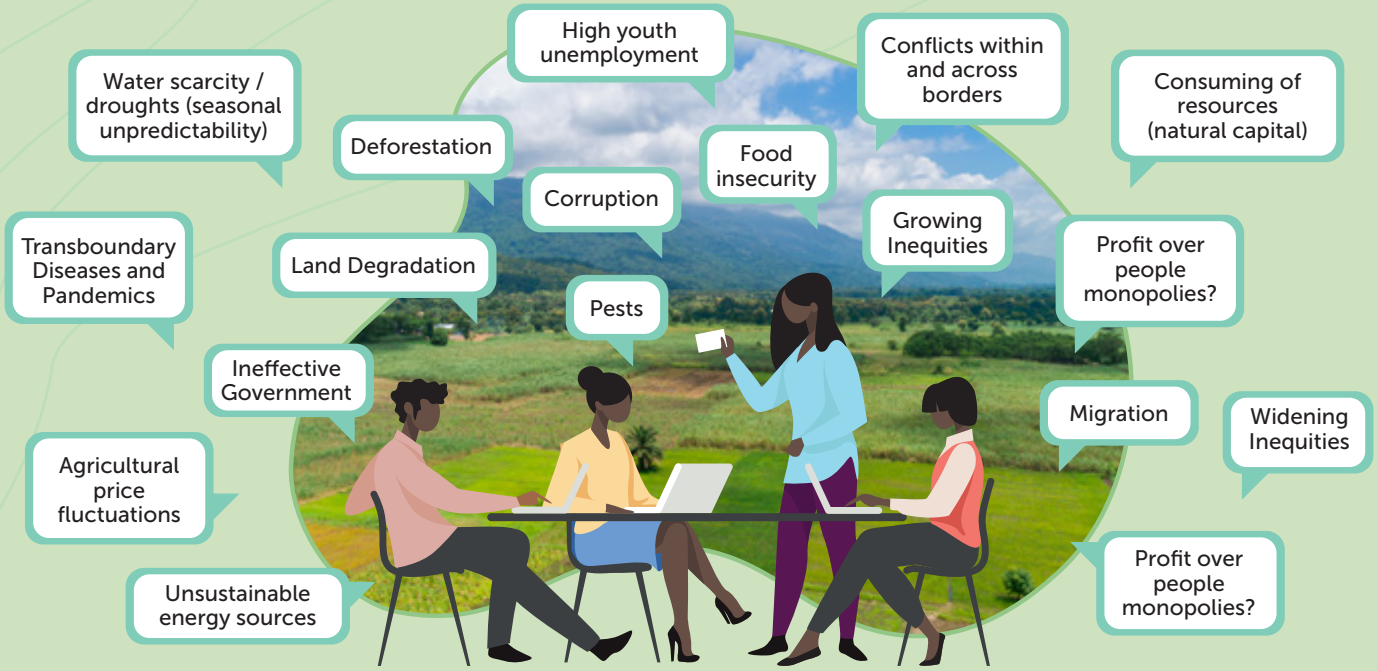
Barrier - identified obstacle that could stop the achievement of an activity.

Once barriers have been identified that could prevent the achievement of the vision they need to be unpacked.

Learning Exercise

Brainstorm barriers that could prevent the achievement of the vision you developed previously. Refer to the figure below for guidance.

Application in the Context of Climate Resilient Agri-Food Systems in the SADC Region



Step 02 Prioritising and Selecting Key Barriers

Step 2 requires **prioritising the barriers identified during the brainstorming session**. Two to three of the most pressing barriers are selected to unpack further.

Learning Exercise

Of the barriers that you have identified as relevant to your vision, **which are likely to be the most prohibitive**? Select two or three of these barriers to take forwards into Steps 3 to 6.

Application in the Context of Climate Resilient Agri-Food Systems in the SADC Region

For example, in the context of climate-resilient agri-food systems in the SADC region, the **most important barriers to consider could be food insecurity, water scarcity/droughts (seasonal unpredictability), and transboundary diseases and pandemics**.

Step 03 Identify the Root Cause

In this step we identify the root or underlying causes of the main barriers selected in Step 2.

Underlying cause - unpacking why that obstacle is in place.

Learning Exercise

Consider the two to three barriers you have prioritised and brainstorm their potential causes. Document your thoughts.

Application in the Context of Climate Resilient Agri-Food Systems in the SADC Region

For example, the underlying causes of the barrier 'water scarcity/droughts (seasonal unpredictability)' may be:

Social

- Overuse of available water sources;
- Unequal access to water resources;
- Exploitation by large scale agricultural and other corporations;
- Lack of conservation orientation;
- Lack of awareness of urban users; and/or
- Greed.

Environmental

- Poor land management; and
- Reduced rainfall due to changes in weather patterns.

Political

- Lack of, or ineffective, water management policies; and/or
- Single sector orientation, lack of integrated development plans.

Institutional

- Unsustainable agricultural practices;
- Lack of education, awareness, and information availability; and
- Weak or ineffective extension services.

Learning Exercise: Barriers and Root Causes

Consider the previously defined Draft Vision Statement. Identify potential barriers that could prevent the vision from being realised. Responses from participants of the SADC Futures webinar series are provided below to assist you:

'Fear of change.'

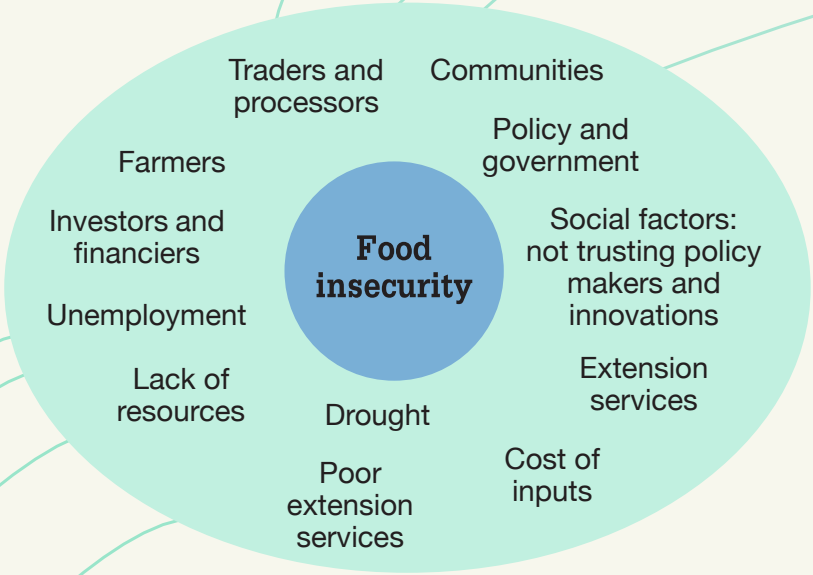
'Funding and investment.'

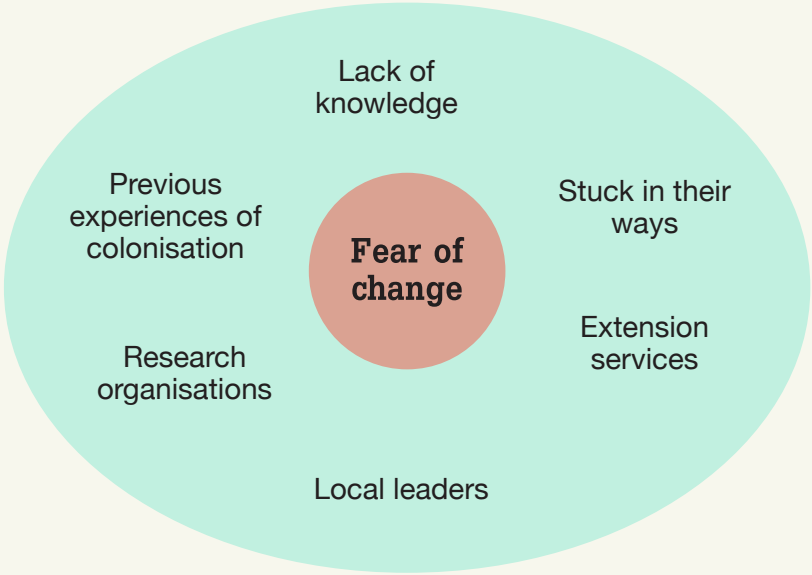
'Political environment.'

'Food insecurity.'

'Different power and economic interests.'

From your list of potential barriers, **choose a key barrier to discuss**. List two to three **underlying causes of the barrier and stakeholders that you could involve in addressing it**. For example, the figures below provide the results from brainstorming sessions from the SADC Futures webinar series where the barriers of 'food insecurity' and 'fear of change' were chosen:





Step 04 Consider the Implications of the Barrier

In this step we consider the implications of the barrier if it is not addressed. A key question in this step is:

What happens if we do not address the barrier?

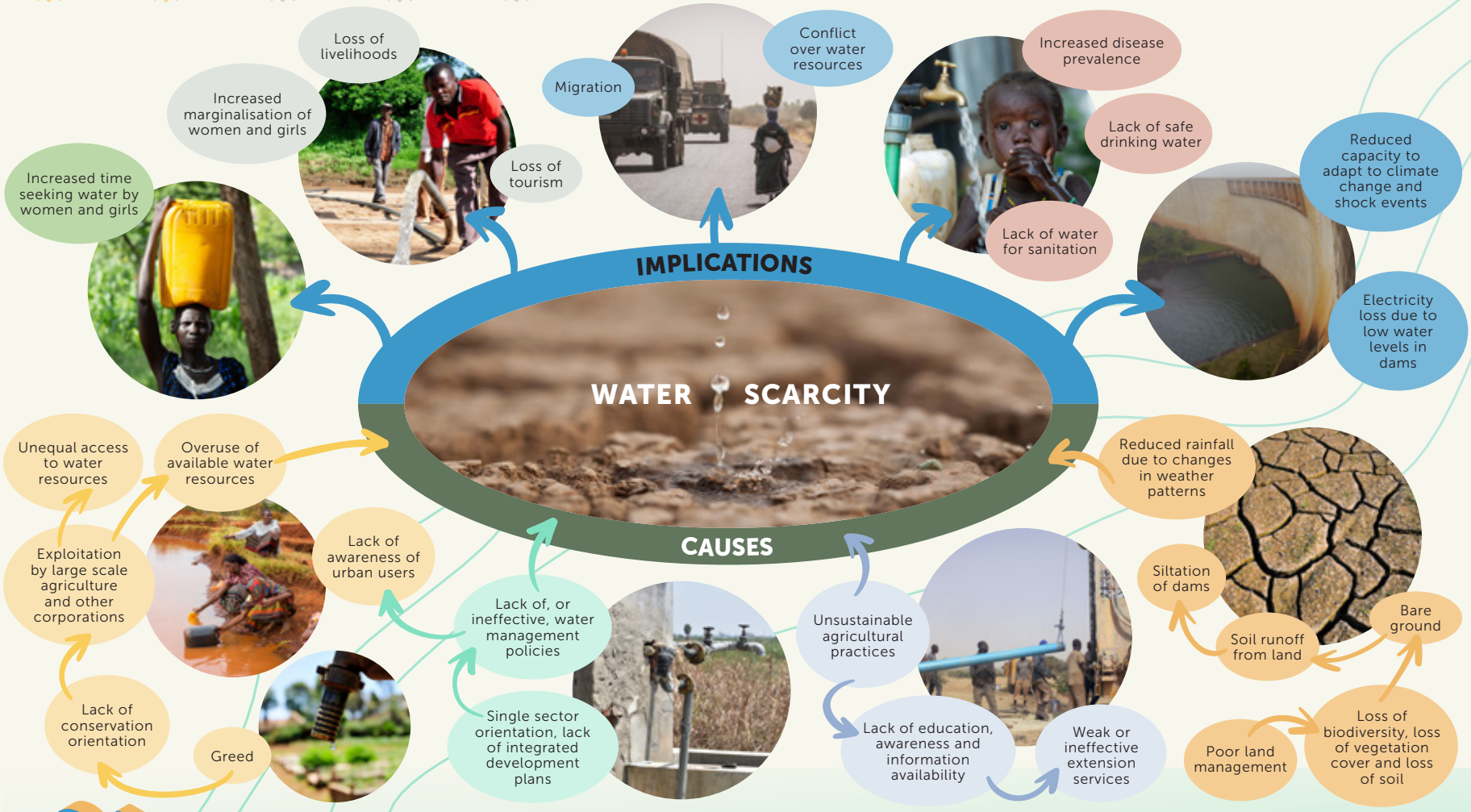
Learning Exercise

Looking at the key barriers you identified in Step 2 ask yourself - **what will happen if these barriers are not addressed**? Document your answers. Refer to the figure below for guidance.

Application in the Context of Climate Resilient Agri-Food Systems in the SADC Region

In the **context of climate resilient agri-food systems in the SADC region**, examples of implications for inaction against water scarcity include:

- Increased time seeking water by women and girls;
- Increased marginalisation of women and girls;
- Loss of tourism;
- Loss of livelihoods;
- Migration;
- Conflict over water resources;
- Increased disease prevalence;
- Lack of safe drinking water;
- Lack of water for sanitation;
- Reduced capacity to adapt to climate change and shock events; and
- Electricity loss due to low water levels in dams.



Questions & Answers

Why is the marginalisation of women and girls listed as an implication for inaction against water scarcity?

It has been found that in the case of water scarcity or drought traditional pastoralists are forced to sell their cattle. When the drought is over, young women or girls are married off to receive bridal payments to allow for buying more cattle. Furthermore, as water becomes scarce, it takes women and girls more time to collect it as they are forced to walk greater distances. This time could be better allocated to education or income generating activities.

Step 05 Categorise the Root Causes & Implications

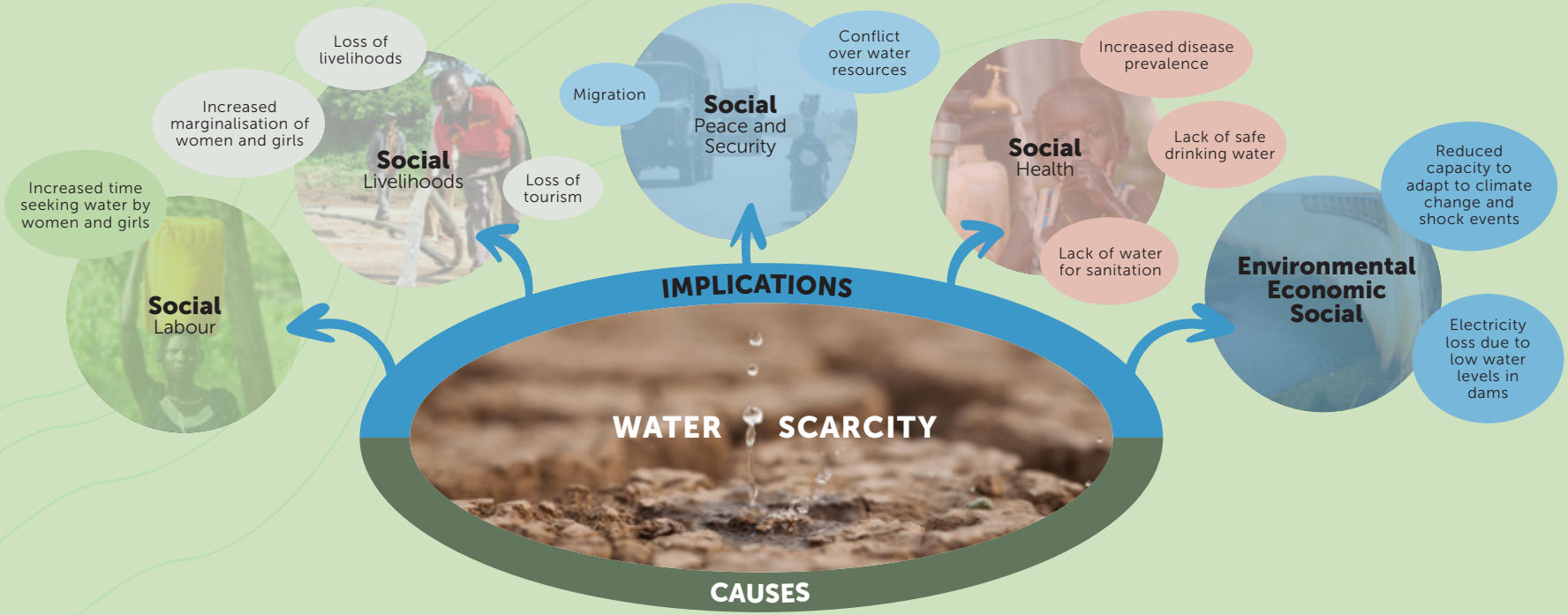
The next step is to group the **root causes and implications according to categories** such as social, economic, political, institutional, cultural, and environmental.

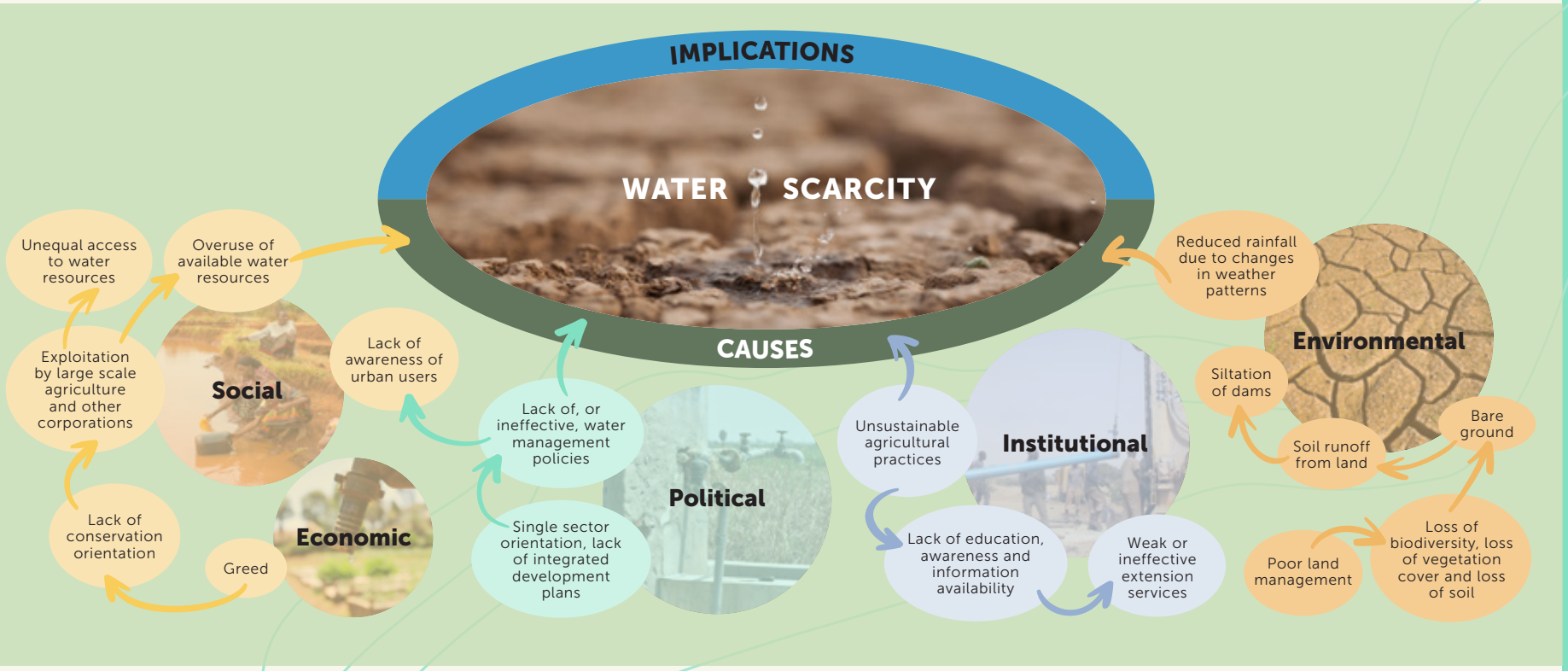
Learning Exercise

Consider the root causes and implications you identified in Steps 3 and 4 and categorise them according to social, economic, political, institutional, cultural, and environmental (where applicable). Document your answers. Refer to the figure below for guidance on this step.

Application in the Context of Climate Resilient Agri-Food Systems in the SADC Region

The causes and implications of the barrier 'water scarcity' in the SADC region can be categorised as seen on the mind map below.





Questions & Answers

With such a broad vision with numerous barriers and root causes, how do you decide which to focus on or prioritise?

The longer aspirational visions, as seen at the start of some policy and strategic planning documents, help to probe critical thinking. However, often after reading such visions one is left wondering where to start. In such a case, the vision should be broken down and topical areas should be allocated to stakeholder groups with the relevant expertise.

Photo: A'Melody Lee (World Bank)

Step 06 Categorise the Stakeholders

Here, we look at the **dimensions, barriers and their root causes and identify the types of stakeholders** that need to be involved to solve the underlying causes of the barriers. A key question to consider here is:

Who are the stakeholders we need to include to drive interventions to address the root causes of the identified barrier(s)?

Learning Exercise

Consider the root causes you identified in Step 3, which stakeholders could drive interventions to address them? Who needs to be involved and who will take ownership of the process? Have you included stakeholders from varied backgrounds with diverse but relevant viewpoints? Document your answers. Refer to the figure below for guidance.

Application in the Context of Climate Resilient Agri-Food Systems in the SADC Region

The stakeholders chosen to address the underlying issue of water scarcity come from multiple sectors and are grouped according to categories (e.g. government, civil society, private sector, and others). This ensures multidimensional viewpoints and non-biased, holistic approaches for addressing the issue at hand.

Government	Civil Society	Private Sector	Others
• Water Department • Land Department • Agricultural Department (livestock, aquaculture, crop production, extension) • Environment/NRM Department • Health Department • Climate Change Directorate • Finance and Planning • Trade Department • Education Department • Department of Transport • Department of Culture, Youth, Gender	• Large, medium and small scale farmers' organisations • Health, education, agricultural, • Environmental International and National NGOs • Youth groups and entrepreneurs • Women's Organizations • Community Based Organizations	• Large Scale Agricultural Companies • Grocery Chains • Aggregators and Processors • Local Farmers' Markets • Irrigation Vendors • Charcoal and Woodfuel Vendors • Transportation companies • Forestry, Wildlife, Tourism operators	• Research Institutions • UN FAO; UNDP; UNICEF • State electric providers • Media • Bilateral Donors

Questions & Answers

What is the ideal stakeholder composition? Who needs to be involved?

Two groups need to be involved in the process:

Foresight organising group - this is a small core group in your foresight exercise that builds your foresight plan; and

Foresight participating group - this is a broad mix of key stakeholders you identify that need to be involved.

Who needs to take ownership for implementing the outcomes of the foresight exercise?

To answer this, ask yourself the following questions

Who will implement the 'strategy' phase?
Who are your strategic stakeholders?
Who are you trying to influence?
Who is going to influence your process?

The following tools and skills can assist with understanding who to prioritise for stakeholder engagement:

Sequencing relationships - this approach is about shuttle diplomacy, designing which stakeholders you need to engage and 'get on board' in an order of priority and 'power', allowing you to leverage more partnerships;

Social network mapping - tool to identify the importance and influence of stakeholders as well as how they exchange information or are connected; and

Negotiating power dynamics - understanding at the outset who could impact your strategies and when you integrate into stakeholder processes you negotiate with power players about 'rules' of engagement.

How intensive will the engagement be and how can you budget?

To answer this, ask yourself the following questions:

Which categories of stakeholders need to be included?
Where are they based?
How can you contact them or meaningfully engage?
How often will you need to engage and in what formats?

Ensure that you budget appropriately for the stakeholder engagement process:

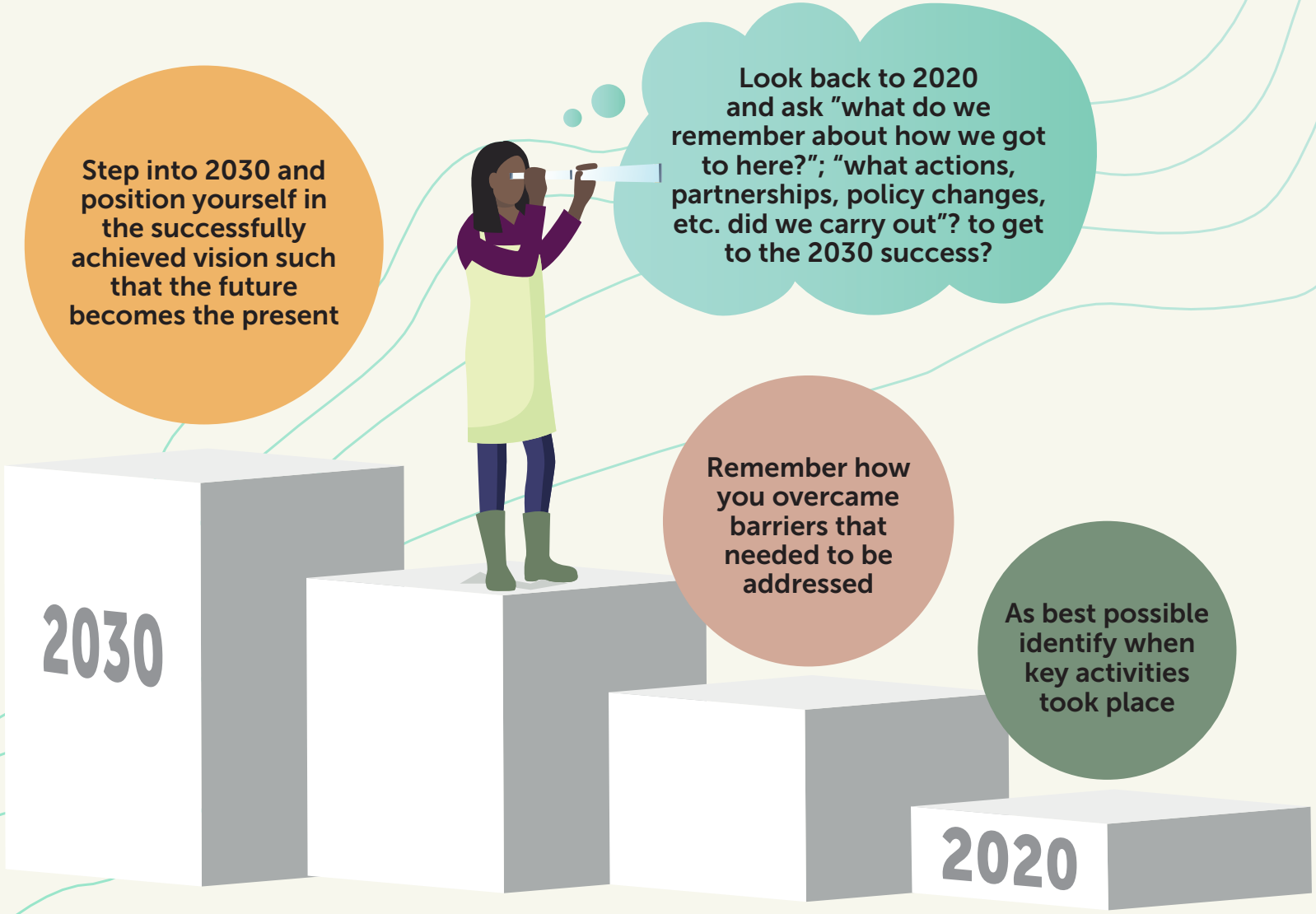
Engagement transaction costs - use your initial stakeholder map to plan out engagement methods to set an initial budget for overall stakeholder engagement processes.

Learning

You should now understand causal analysis and how it fits into the plan stage of the foresight process. You have followed the key steps learning how to identify and prioritise barriers, identify root causes, understand the implications of inaction, and how to determine which stakeholders to include in addressing the root causes of barriers. This method should assist in clearing the pathway(s) to the desired future.

Backcasting

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 a system. It focuses on changing the present to try to change the conditions toward creating the desired future (UNDP, 2018). The thinking that emerges during this process strengthens the concept that there are many plausible futures, and that a system is not set on a linear path (Conway, 2014).



Backcasting is used in complex situations involving multiple stakeholders where although there is a desired future vision, it is unclear how to reach it. It leads to research plans for implementation of the actions needed and participation is an essential feature (European Foresight Platform, n.d.). It can be characterised as a social learning process and the long-term perspective provides a means of letting go of the present way of meeting specific social needs. The method is applied in cases where an objective is identified that could be influenced by uncertain future events.

Stakeholder participation is crucial, and the future vision cannot be realised by a hierarchical approach, or limited stakeholders. Furthermore, the desired future cannot be achieved by simply extrapolating from the present (European Foresight Platform, n.d.).

Backcasting asks the question, 'how did we get here'?

What is the method?

- **Backcasting** is an approach that starts with **defining a vision or desirable future** and then works backwards to identify key efforts, partnerships, policy changes that will connect that future to the present.
- Backcasting asks the question**, 'how did we get here?'** and uses that to be creative in our planning process.

Why apply it?

- Backcasting is used both in the **plan and strategy phases** as input to the development of plans and **transformative strategies.**

Key Steps to Backcasting

- **Step into 2030 and position yourself in the successfully achieved vision such that the future becomes the present;**
- **Look back to 2020 and ask what do we remember about how we got to here; what actions, partnerships, policy changes, etc. did we carry out to be successful in 2030?**
- **Remember how you overcame barriers that needed to be addressed; and**
- **As best possible, identify when key activities took place.**

Learning Exercise: Backcasting

We are in 2030 and have successfully achieved this aspect of our vision:

'Farmers and pastoralists across the 16 SADC member countries are using climate resilient, agroecological approaches and ably providing diverse sources of food to equitably meet food and nutritional security requirements of rural and urban populations'. Now consider the three questions below, use the responses from the SADC Futures webinar series participants to guide your thinking.

How did we get to where we are now?

Tell us what you remember about how we managed to successfully achieve this?

'I remember how we developed local competence to record data relating to food safety.'

'I remember that participants in a foresight training course joined forces in a multi-stakeholder platform to address key barriers.'

How did we overcome the barriers on the way?

Tell us what you remember about how we were able to minimise the effects of drought in Zambia, Botswana, Namibia, and Angola in 2026?

'SADC members made a big investment in extension services so that they could support farmers to implement climate smart practices.'

'Incentives were made available for farmers to conserve limited water sources.'

'Farmers used drought resistant seed and focused on drought resistant crops.'

Who were some of the new stakeholder groups we brought in?

To achieve our vision, what were some of the surprising new partnerships?

'Partnerships between NGOs, private sector, and intergovernmental ministries.'

'Improved communications between researchers and farmers.'

'Increased collaboration between the private sector and farmers.'

The backcasting method is revisited in more detail during the latter stages of the foresight framework.

Learning

You should now have a basic understanding of the backcasting method and how it contributes to new mindsets about what is possible. You have looked back from the desired future and determined how you reached it. You opened your mind to the likely barriers that you overcame and how you achieved this. You considered who the key stakeholders included in the process were and which partnerships assisted in reaching the vision.

Pathways

Pathways, often called impact pathways or theories of change, are applied in the plan stage (as well as in the reflection and strategy stages) of the foresight process. **The pathway development approach requires creating storylines that frame the analysis and discussion around possible future development trajectories**. To develop pathways that can lead us to a more desirable future, we need to understand the trajectory that we are currently on.

The pathway concepts range from sets of quantitative and qualitative scenarios (or narratives) of potential futures to solution oriented decision-making processes targeting desirable societal goals (European Commission and European Environment Agency, n.d.). Pathway approaches typically focus on environmental, technological, economic, and/or socio-behavioural trajectories and involve various dynamics, goals, and actors across different scales.

What is the method?

- Pathways outline the **actions, actors, and timeframes** necessary to achieve the agreed outcome.

Why apply it?

- Developing pathways allows for **improved understanding of the actions and stakeholders** required to reach a desired future.

Application in the Context of Climate Resilient Agri-Food Systems in the SADC Region

A climate-resilient pathway for development is a continuing process for managing changes in the climate and other driving forces affecting development, combining flexibility, innovativeness, and participative problem solving with effectiveness in mitigating and adapting to climate change (Denton et al., 2014). Based on the findings of the input and analysis stages, it is understood that the SADC region agri-food systems are affected by climate change and require the development of resilient pathways. However, the agri-food systems also enhance climate change through emissions generated during production (e.g. land clearing) and post-production (e.g. refrigeration and transport) activities. Therefore, the development of climate resilient pathways also needs to consider moving away from dangerous anthropogenic interference with the climate system by adopting sustainable development approaches. For further information on climate resilient pathways refer to the supplementary SADC Futures knowledge series report on ‘Climate Resilient Development Pathways’.

Climate resilience is essentially viewed as a set of capacities. The agri-food systems encompass several areas where resilience can be enhanced for example adaptive infrastructure, adaptive people, resilient ecosystems, proactive organisations and institutions and enhanced livelihoods and farm functioning. It is important to unpack the theme of climate resilience a bit further by thinking of actions and activities that could be used for future planning and climate resilient pathway building. For example, let us consider:

What do we need to prepare for when considering future climate resilience?

Physical Infrastructure

- Management of natural infrastructure such as wetlands or aquifers;
- Structural adaptations e.g. sea wall construction in the case of SADC coastal states;
- Maintenance of early warning systems; and/or
- Water storage capacities.

Socio-cultural

- Values such as equity, intergenerational responsibility, and commitment to reducing climate change;
- Social awareness of climate change, climate events, climate impacts;
- Level of health, especially malnourishment;
- Access to water and adequate sanitation facilities;
- Gender equality; and
- Level of education.

Photo: TOP World Agroforestry BOTTOM Olivier Asselin (FAO)

Natural Resources

- Managing water availability and quality;
- Diversity of crops/livestock/land use patterns;
- Practice of sustainable land management such as conservation agriculture (CA), climate-smart agriculture (CSA), and agroecological approaches;
- Level of biodiversity;
- Functioning of ecosystem services; and
- Maintaining intact forested areas and trees on farms.

Economy

- Off-farm employment opportunities;
- Diversity of the economy;
- Household savings and income;
- Flexible economic system to absorb internal migration and seasonal migration; and
- Ability to access climate finance.

Photo: TOP Daniel Hayduk (FAO) BOTTOM S.Kilungu (CCAFS)

This was a brief look at what can be done to move the SADC region agri-food systems towards a more climate resilient future. By unpacking the theme, it becomes obvious that there are many different actions and activities to consider.

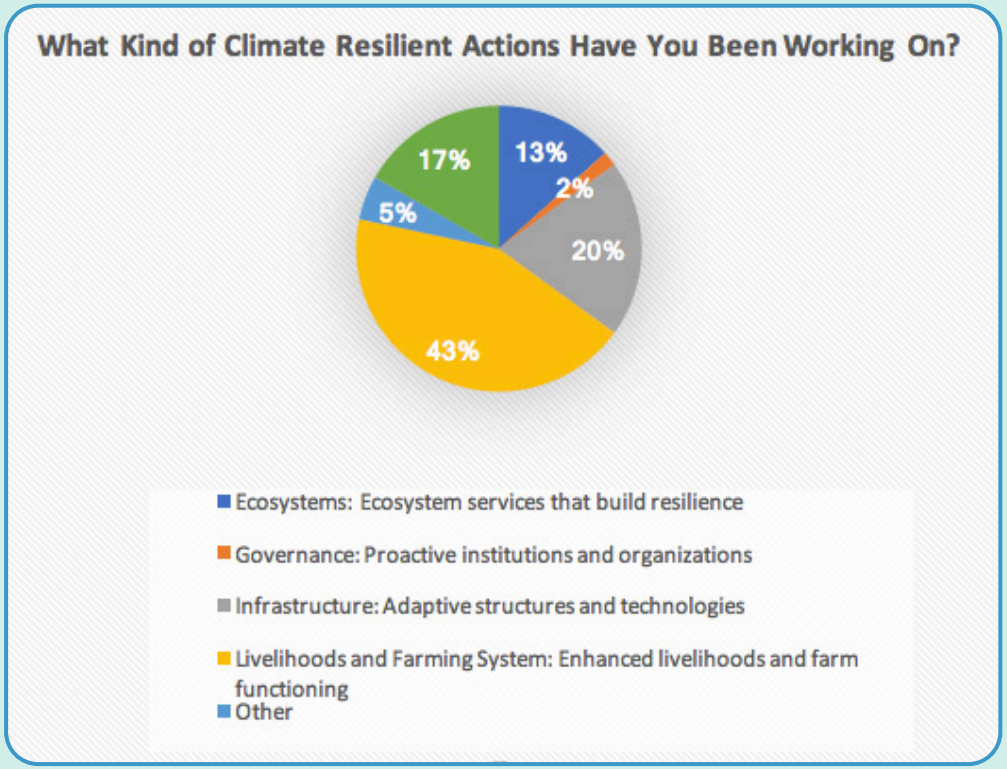
Questions & Answers

What is the difference between building a climate resilient strategy and a climate resilient pathway?

Although strategic plans include visions of where you want to be, they do not take account of the methods that are needed to get from where you are now to where you want to be. Essentially, a strategy is a one-shot process; whereas a pathway is much more mindful of what happens along the way when moving from where you are to where you want to be. The pathway approach forces you to think not only about your ideas on how to get to your end point but what happens in the interleading time.

Learning Exercise

Consider the pie chart on the next page (which was developed based on the opinions of the SADC Futures webinar series participants), what areas are lacking and what could this mean? It may be useful to carry out a similar workshop exercise in the context of your theme to identify which dimensions are lacking in your foresight approach. This may require a change in mind set and perspective or the inclusion of stakeholders from more varied backgrounds.

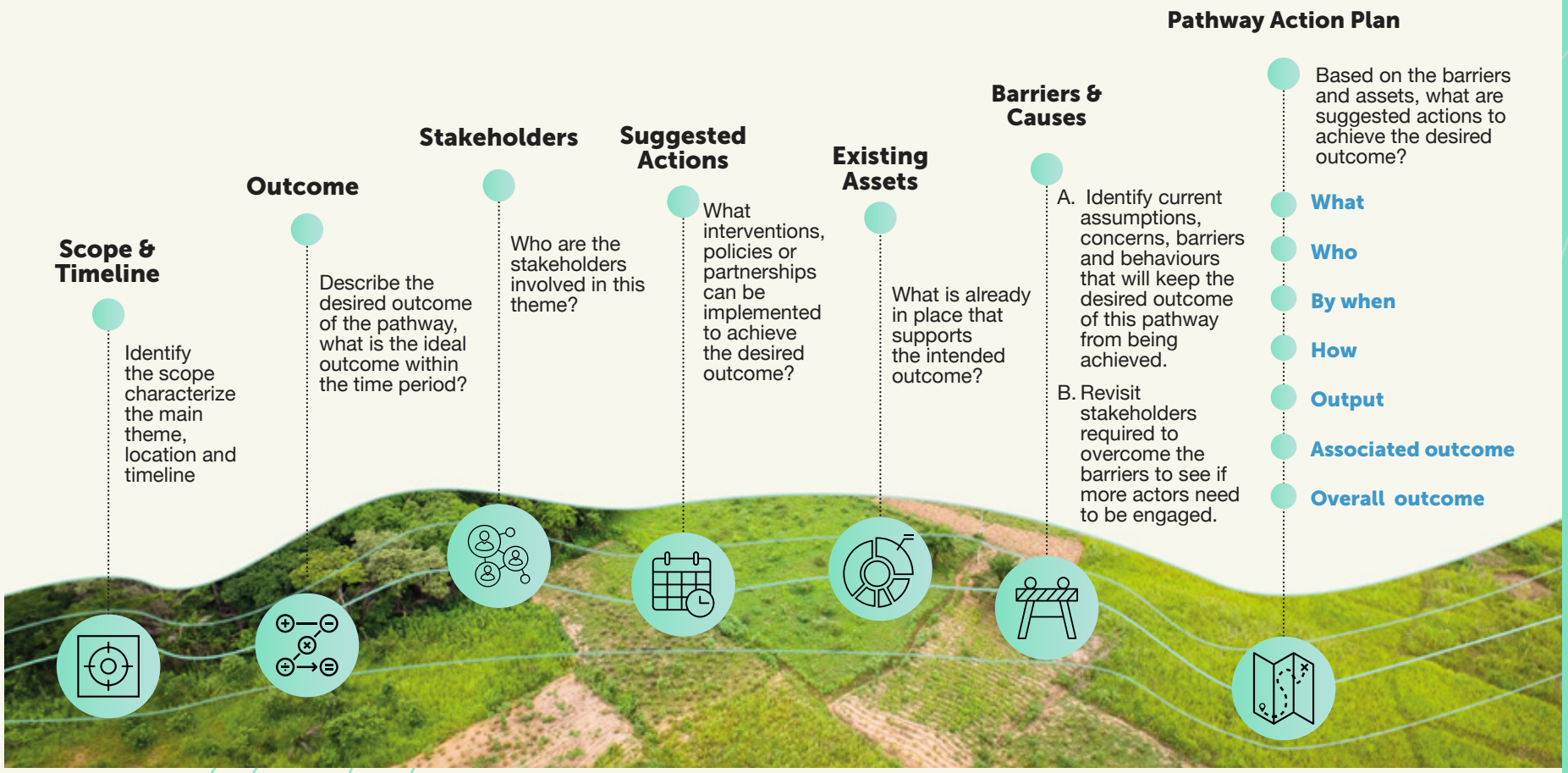


Now that we have **identified the actions and activities to consider in developing a climate resilient pathway** the following, non-explicit steps can be followed:

- Provide the scope and timeline;
- Identify the preferred outcome;
- Select the stakeholders that need to be involved;
- Identify which actions and activities need to be considered;
- Identify any existing assets that can be built off (in terms of planning this could include partnerships);
- Understand the barriers and causes; and
- Develop the pathway action plan, providing detail on activities such as who, how, what is the intended outcome, by when, and what is the overall outcome?

These steps can prove useful for brainstorming with a team. This process can start as a participatory exercise and then move to a written plan.

Climate-Resilient Pathways



Learning Exercise

Think of the theme you need to address and using the steps outlined in the figure above undertake a brainstorming exercise with a team of stakeholders with diverse perspectives. Process and document your ideas as actions in a Pathway Action Plan. Refer to the pathway development examples below for further guidance.

Climate Resilient Pathway Example 01
Agroecological Solutions

This section provides an example of how to build a climate resilient pathway following the steps given in the figure on the previous page. It requires a participatory process involving numerous stakeholders with diverse perspectives. The pathway is built as follows:

What is the scope and time frame?

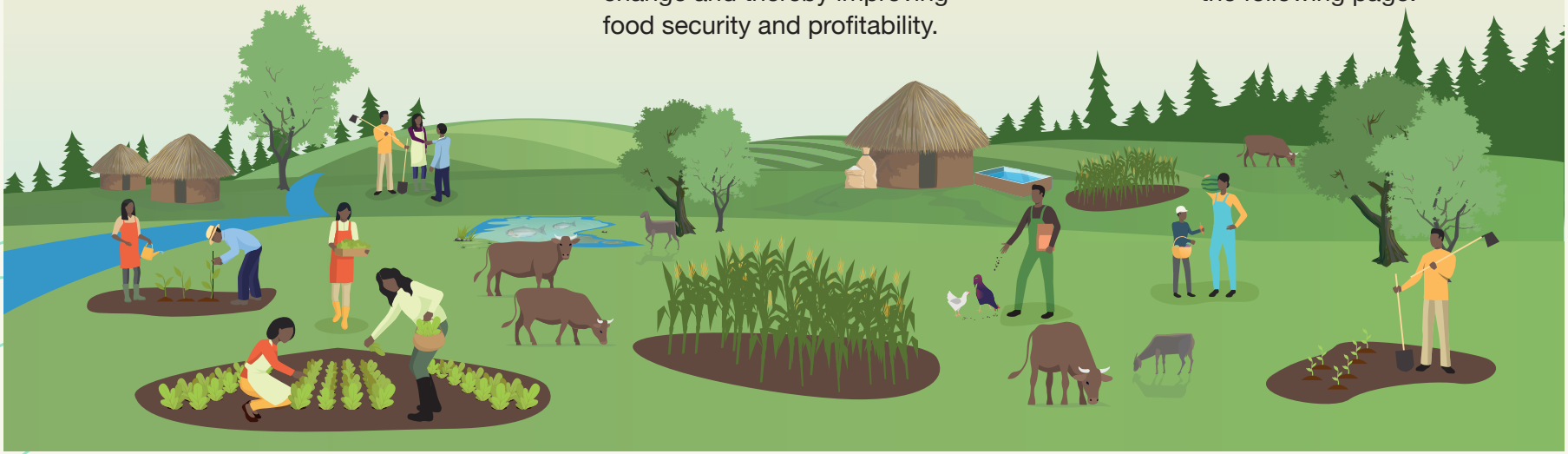
Climate smart, agroecological solutions to address water scarcity and build climate resilience in agricultural systems by 2030.

What is the preferred outcome? What do we want to achieve from this agroecological pathway?

Farmers (women, men, and youth) are applying ecosystem based, agroecological, climate smart and water saving practices and technologies to adapt farming systems to the effects of climate change and thereby improving food security and profitability.

Who are the stakeholders that we need to involve?

The stakeholder groups that would be important to include for the purposes of climate resilient agri-food systems in the SADC region, are provided in the figure on the following page.



Indicative Stakeholder Groups

GRASSROOTS/ COMMUNITY-BASED ORGANISATIONS

Women's Savings Groups, Water Users Groups

COMMERCIAL/ PRIVATE PLAYERS

SAFCOL, Send Vendors, Traders Groups, Telecom, Transporters

FINANCIAL INSTITUTIONS

Banks

REGIONAL ECONOMIC COMMUNITIES

SADC

GOVERNMENT

Agriculture, Environment and Climate Change, Disaster Preparedness, Education, Finance and Planning, Gender Affairs, Local Authorities

MULTILATERAL ORGANISATIONS

UN Environment, FAO, UNHCR, UNICEF, UNDP

CIVIL SOCIETY

Youth and Women's Organizations, Water Users Organizations, CFS, WV, AWF

MANAGERS OF LOCAL RESOURCES & LABOURERS

Farmers, Pastoralist Groups, Conservancies

SCIENTIFIC COMMUNITIES & ACADEMIA

BITRI, CCARDESA, Okavango Research Institute, ILRI

MEDIA AND JOURNALISTS

Radio Station, Reporters

Stakeholders

- **SADC FANR**
- **Government sectors -** Agriculture, water, environment, trade, health, education, finance
- **Extension services**
- **NGOS**
- **UN FAO**
- **Farmers groups**
- **Women's organizations**
- **Youth Groups**
- **Development partners, investors**
- **Media**

The next step is to brainstorm and document suggested actions.

For example:

- Promote short distribution webs and build local markets;
- Promote integrated farming systems to increase diversification;
- Build capacity for sustainable land management practices and water harvesting techniques;
- Develop seed saving networks;
- Pest monitoring and management;
- Labour sharing across farms;
- Promote participatory governance of food systems; and
- Expand regenerative and conservation farming.

Any existing assets that can be leveraged off are then identified.

Such as:

- Build off local community-based organisation (CBO) networks engaged in integrated farming training;
- Identify local informal labour sharing agreements;
- Identify agroecological practice promoters;
- Identify conservation agriculture groups; and
- Identify any relevant, existing projects and programmes.

Then we identify the barriers and underlying causes:

Barriers could include:

- Lack of understanding of the relationship between land management and water availability;
- Lack of diversity in farming systems;
- Separate sectoral advice to farmers (e.g. health, agricultural extension, nutrition, veterinarians, and irrigation); and
- Lack of integrated water management policies.

Underlying causes could include:

- Unsustainable agricultural practices;
- Limited access to local and higher scale markets for diverse products; and
- No cross-sectoral planning processes for water management and climate resilience actions.

Develop pathway action plans.

This step is built on the different actions and activities previously identified. For example, consider the figure on the following page, to develop a climate smart, agroecological based strategy the pathway action plan could entail:

What

Develop a climate smart, ecosystems based strategy / enabling environment.

By when

Year 1

How

- A technical committee / expert working group to provide evidence, technical backstopping and input into policy amendment process.
- Lobby and establish key relevant policy contacts and relationships.
- Draft practical guidance for implementation of climate smart and ecosystem based approaches.

Associated outcome

Policy and enabling environment that promotes a policy incentive and implementation path for ecosystem based approaches in farming systems.

YEAR 01

Who

Agriculture, water, environment,

Research organizations working on livestock, aquaculture, climate smart agriculture and landscapes,

National Farmers Associations,

NGOs promoting agroecological and water saving approaches,

FAO.

Output

Amended language, targets and goals to relevant policy and strategic frameworks to explicitly mention ecosystem based and agro-ecological principles.

Overall outcome

Farmers (women, men and youth) are applying ecosystem based, climate smart and water saving practices and technologies to adapt farming systems to effects of climate change and improve food security and profitability.

What is the overall outcome we want to achieve?

Farmers (women, men, and youth) are applying ecosystem based, climate smart and water saving practices and technologies to adapt farming systems to the effects of climate change and thereby improving food security and profitability.

Climate Resilient Pathway Example 02
Developing Regional Value Chains for Climate Resilient Staples

A second example on building a climate resilient pathway, according to the steps given previously, is as follows:

What is the scope and time frame?

Develop viable business plans for local level processing of small grains by 2022.

What is the preferred outcome? What do we want to achieve from this pathway?

Successful local level processing of small grains by 2022.

Who are the stakeholders that we need to involve?

- Market linkage associations;
- Local business associations;
- Micro-financing and loan agencies;
- Manufacturers;
- Ministry of Agriculture; and
- Ministry of Finance and Planning.

The next step is to brainstorm and document suggested actions

- Draft a business plan as a basis for consultations across value chain actors;
- Assess viable locations to test elements of the business plan; and
- Connect financiers.

Any existing assets that can be leveraged off are then identified.

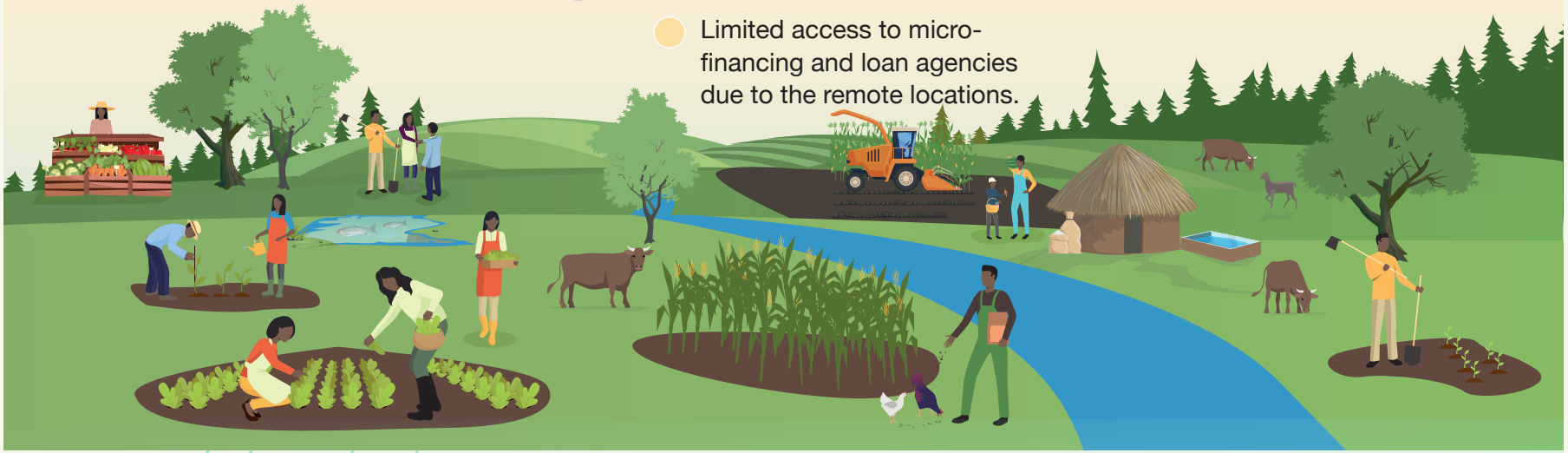
Existing projects and programmes in the area.

Then we identify the barriers and underlying causes.

- Access to markets is restricted by poor infrastructure; and
- Limited access to micro-financing and loan agencies due to the remote locations.

Develop the pathway action plan.

The figure on the following page outlines the proposed pathway action plan.



Questions & Answers

What is the difference between a trajectory and a pathway?

Trajectories and pathways are essentially the same foresight method, they both consider the journey to get to a desired end point. They both ask the questions: How do you get to the end point? What is the most appropriate way? Or in the context of climate resilient agri-food systems: **How can you maximise people's livelihoods and well-being as you make these changes?**

YEAR 02

What
Develop viable business plans for local level processing of small grains.

By when
Year 2

Output
Demand-driven business plan tested in a number of pilot locations.

Overall outcome
Women and youth benefit from increased efficiency and effectiveness of production and processing of small grains/climate-smart crop options (millet and sorghum).

Who
Market linkage associations,

Local business associations,

Micro-financing and loan agencies,

Manufacturers,

Ministry of Agriculture,

Ministry of Finance and Planning.

How
- Draft business plan as a basis for consultations across value chain actors,
- Assess viable locations to test elements of business plan,
- Connect loan and financiers.

Associated outcome
Local level enterprises established and functioning to allow ease of access to processing technology.

What is the overall outcome we want to achieve?

Women and youth benefit from increased efficiency and effectiveness of production and processing of small grains / climate-smart crop options (millet and sorghum).

Learning

You now understand pathways and how to develop a Pathway Action Plan which includes defining the actions, actors, and time frames necessary to achieve an agreed outcome. It is important to note that there are multiple pathways that can be followed to reach a vision.

Trade-Offs

'Trade-offs' is the final method covered in the plan stage. This method can be used in multiple stages of the foresight framework. Trade-offs are required in this stage of the foresight process as we want to see what we need to take forwards in a foresight process i.e. what is viable, before we think about the different scenarios.

What is the method?

- A trade-off is a situational decision that involves **diminishing or losing one aspect in return for gains in other aspects.**
- In simple terms, a **trade-off is where one thing increases and another must decrease.**

Why apply it?

- Looking for trade-offs is valuable for **identifying conflicting elements across multiple pathways** toward the future state.

Trade-offs are a part of everyday life, to understand the concept better, review the last 24 hours and see what trade-off decisions you may have taken:

Learning Exercise

How did you spend the last 24 hours? Over the last 24 hours, on a scale of 0-5 (where 5 is very good), how would you rate yourself in terms of the daily activities illustrated below?

'1/5 for family time.'

5.

'2/5 for exercise.'

5.

5.

'0/5 for sleep.'

'2/5 for relaxation.'

5.

5.

'3/5 for healthy meals'.

What did you give up and what did you gain?

In the last 24 hours, what did you give up to have more time on another aspect? Use the responses below from participants of the SADC Futures Webinar Series to assist you.

Photo: Jenny Vaughan for Mercy Corps

Application in the Context of Climate Resilient Agri-Food Systems in the SADC Region

The scale, scope, and complexity of agri-food systems and their linkages to natural and human systems mean that future development will result in inevitable trade-offs among and between dimensions or impact areas such as nutrition and food security; poverty reduction, livelihoods, and jobs; gender equality, youth, and social inclusion; climate adaptation and greenhouse gas reduction; environmental health and biodiversity (Antle & Valdivia, 2020). It is crucial that climate resilient agri-food systems development meets the needs of all members of society, and thus the development of pathways must involve broad stakeholder participation.

Climate-resilient adaptation and mitigation actions may introduce trade-offs such as between environmental and economic goals e.g. maintaining natural, forested areas versus expanding crop cultivation for enhanced food security and income or compromising water quality by increasing fertiliser usage for better yields. Furthermore, adaptation actions may increase greenhouse gas emissions e.g. increased fossil fuel powered cold storage in response to higher temperatures.

For example, earlier we identified potential climate resilient pathways:

- Climate Smart, Agroecological Solutions for Climate Resilience; and
- Developing the Regional Value Chain for Climate Resilient Staples.

However, if we consider these pathways, trade-offs will likely occur such as:

- Vested interest in small grains could result in fertiliser subsidies that may disincentivise integrated farming systems or seed saving;
- Farmers could potentially trade-off maize subsidies for drought resilient crops; and
- Promoting subsidies and fertilisation versus agro-ecological approaches.

Climate Resilient Pathways

Agroecological climate smart processes
Develop a climate smart, ecosystem based strategy.

Markets for small grains
Awareness campaign on the benefits of small grains.

Digital extension
Develop linked radio and mobile phone communications for distance extension service remote communities.

Scope & Timeline
Outcome
Stakeholders
Suggested Actions
Existing Assets
Barriers & Causes
Pathway Action Plan

- What
- Who
- By when
- How
- Output
- Associated outcome
- Overall outcome

Outcome
Enabling environment that promotes a policy incentive and implementation path for ecosystem-based approaches in farming systems.

Outcome
Increased demand for producing, processing, marketing and consuming small grains.

Outcome
Functioning distance extension services to support farmers in applying climate smart practices.

Photos: TOP | © Alex Fassio (CFOR) MIDDLE | ©S.Kilungu (CCAFS)

Photo: Sonja Leitner (ILRI)

Learning Exercise

Think of your theme and consider what the implications of gains in one area will have on other areas. Will the gains diminish outcomes in other areas? Would such trade-offs still allow for viable scenario planning? Document your answers. The key question to be addressed is:

How do you reconcile trade-offs in a foresight process?

A valuable tool for assessing trade-offs in a foresight process is Trade-Off Analysis (TOA). Essentially, TOA is a participatory process using qualitative and quantitative data and modelling tools to evaluate how technological and institutional innovations can improve system performance using foresight methods and relevant metrics described as impact indicators (Antle & Valdivia, 2020). An example of a farming system level trade-off analysis by Antle and Valdivia (2020) is provided below:

The results from a TOA study on the East Africa Dairy Development Project (EADD) show that while farm income increases and poverty decreases, and total assets owned by both male and women increase, the share of assets controlled by women declines, and water use and greenhouse gas emissions increase. Therefore, there are likely to be **trade-offs between the economic benefits of livestock intensification and key social and environmental impacts** that could be addressed in the research design for improvements in livestock management to reduce water use and greenhouse gas emissions. It was found that it will be important to design and distribute technology that is inclusive to mitigate possible adverse gender effects.

Farming System Scale: Economic, Environmental and Social Impact Assessment of the East Africa Dairy Development Project in Kenya (Antle & Valdivia, 2020)

Objective:

The goal of this study was to conduct an impact assessment of the practices promoted by the East Africa Dairy Development Project (EADD), using baseline data collected by the International Livestock Research Institute (ILRI). This analysis was designed as a proof-of-concept for use of the Environmental Matrix, developed by the Bill and Melinda Gates Foundation (BMGF), with the Tradeoff Analysis Model for Multi-Dimensional Impact Assessment (TOA-MD). The analysis highlighted some of the complex economic, environmental and social tradeoffs and synergies that are likely to be associated with dissemination of the EADD practices at farm, sub-regional and regional scales.

Key Results:

Adoption rate 76%

Farm Income 46%

Poverty rate 7%

Water use EFF 20%
Total Water use 20%
CH4 Efficiency 27%
Total CH4 Emissions 22%

Women's asset share 8%

Infant milk consumption 45%

Tradeoffs and Synergies

The analysis shows that different EADD implementation scenarios result in different potential adoption rates and important tradeoffs and synergies across the outcome indicators. Increasing income reduces poverty and increases infant milk consumption as well as efficiency in the use of water and methane emissions. However, as farm income increases, the share of assets controlled is predicted to decline. Total water use and methane emissions also increase. See figure on the left.

Indicators:

Economic

Poverty

Farm household income

Environmental

Water consumption by livestock

Livestock methane emissions

Nutrition and social

Milk consumption

Men's and women's asset ownership

Models/Approaches:

TOA-MD – Impact Assessment

LifeSim – Livestock Model (CIP)

Data:

EAAD Baseline household survey data

Secondary data (previous studies, literature)

Reference:

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Learning

You now have a basic understanding of trade-offs. You know that looking for trade-offs is valuable when you need to identify conflicting elements across multiple pathways toward the future state.

Photo: Axel Fassio (CIFOR)

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SADC Futures

Developing Foresight Capacity
for Climate Resilient
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CGIAR RESEARCH PROGRAM ON Climate Change, Agriculture and Food Security

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