CLIMATE RESILIENCE IMPACT MEASUREMENT FOR POOR RURAL COMMUNITIES

A MERL (MONITORING, EVALUATION, REFLECTION AND LEARNING) MANUAL FOR COMMUNITY-BASED CLIMATE CHANGE ADAPTATION (CBCCA)

E. Kruger, N. Dlamini, T. Mathebula, B.T. Maimela, S. Mathela, K. Kotschy

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A MERL (Monitoring, evaluation, reflection and learning) manual for community-based climate change adaptation (CbCCA)

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- Dissemination and scaling of a decision support framework for climate change adaptation for smallholder farmers in South Africa (**WRC report no. TT 967/1/26**)
- Community-based climate change adaptation and local food systems: Handbook and case studies (**WRC report no. TT 967/2/26**)
- Community-owned water access: Guidelines and case studies (**WRC report no. TT 967/4/26**)
- Microfinance handbook for smallholder farmers in South Africa: A case study on small businesses (**WRC report no. TT 967/5/26**)
- Multistakeholder platform development manual: Guidelines for successful implementation (**WRC report no. TT 967/6/26**)
- Climate Resilient Agriculture: Practices for smallholder farmers. Farmer Handouts: English (**WRC report no. TT 967/7/26**)
- Climate Resilient Agriculture: Practices for smallholder farmers. Farmer Handouts: isiXhosa (**WRC report no. TT 967/8/26**)
- Climate Resilient Agriculture: Practices for smallholder farmers. Farmer Handouts: isiZulu (**WRC report no. TT 967/9/26**)
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EXECUTIVE SUMMARY

MDF is collaborating with SODI (Solidarity Service International eV) and the Water Research Commission to build a programme in community-based climate adaptation (CbCCA) in South Africa. We conceptualize climate change adaptation for smallholder farmers through climate-resilient agriculture (CRA) and water and natural resources management (W&NRM) on three nested levels: micro-, meso-, and macro-levels. At the micro-level, participants are farmers interacting with each other - and possibly others in their community - in peer learning groups, interest groups, and committees. As one moves to the meso- and macro-levels, the range and diversity of people and organisations involved broadens to include other players such as local and national government, civil society organizations (CSOs), the private sector, and academic institutions

The first step in strengthening MDF's tools for assessing smallholder farmer resilience was to strengthen the underlying theoretical framework. This was done by combining indicators of agroecosystem resilience with the concept of absorptive, adaptive, and transformative resilience capacities as used by Oxfam and others, to produce the theoretical framework.
The framework was used to design a methodological process with indicators and tools. An important consideration in developing the indicators was how to promote coherent monitoring and evaluation across the different scales. The resilience snapshot was improved and updated to incorporate the methodological considerations described above. These questionnaires are called snapshots as they can be administered at any time in the individual's progression towards resilience. They are not project-specific and are not meant to assess project outcomes, but rather to highlight changes the participant has made to adapt to climate change and to assess the improved resilience from such changes. In addition to the individual interviews, there are aspects of resilience, notably social organisation, and changes in human capacity and learning related to climate change that are better analysed in groups, as these aspects are more relational in nature and rely on people's understanding, thinking, and opinions. For these aspects, a participatory impact assessment process was developed. A third tool has been developed to explore in some depth the impact of the village savings and loan associations (VSLAs) on a selected number of individuals' income-generation and business development and expansion activities.

This manual outlines the tools and the online database and dashboard that have been developed to summarise and visualise the information from these processes. It also provides a case study as an example of using the summarised information in a narrative report.

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ACRONYMS AND ABBREVIATIONS

CbCCA	Community-based Climate Change Adaptation
CRA	Climate resilient agriculture
CSO	Civil Society Organisation
DFFE	Department of Forestry, Fisheries and the Environment
MDF	Mahlathini Development Foundation
MERL	Monitoring, evaluation, research, and learning
SODI	Solidarity Service International
TRANSMANGO	EU Programme on the Future of Food and Nutrition in Europe
UNEP	United Nations Environment Programme
UNFCCC	United Nations Framework Convention on Climate Change
W&NRM	Water and natural resources management
WRC	Water Research Commission

CHAPTER 1: INTRODUCTION

This handbook is meant for those individuals and organisations who are interested in understanding how measure and assess the climate resilience impact of community-level adaptation interventions.
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This handbook is the culmination of around ten years' worth of implementation and is being published as one of a series of handbooks and case studies within a Water Research Commission study and dissemination process entitled "Dissemination and scaling of a decision support framework for CCA for smallholder farmers in South Africa" (Project number: C2022/2023-00746). As per project cycle requirements, this handbook in part fulfils the requirements for the aim entitled "The development and testing of a coherent framework and indicators for climate resilience

Mahlathini Development Foundation (MDF) has spent many years developing and refining various tools for monitoring and evaluating our work of building resilience among smallholder farmers. These tools are varied and are used for different purposes and on different time scales, for example:

- Baseline assessments are once-off assessments of farming practices used when working in an area for the first time.
- Regular farmer monitoring forms are used for monitoring various aspects, at different frequencies (e.g., savings groups are monitored monthly, but poultry are only monitored every six months).
- Seasonal reviews are done together with farmers to assess changes and benefits.
- Participatory impact assessments are done by farmers in focus groups on a less frequent basis (e.g., every few years).
- Livelihood surveys are also carried out occasionally.
- Research projects sometimes provide opportunities for more in-depth monitoring or focused case studies.
- The *Resilience Snapshot* tool is used to provide a summary of resilience, either annually or at the end of a project. It is based on a questionnaire for farmers as well as data from some of the other sources mentioned above. Farmers are asked to compare their current situation and farming practices to their situation and practices before they started working with MDF, to see whether resilience has indeed increased as intended.

MDF is collaborating with SODI (Solidarity Service International eV) and the Water Research Commission to build a programme in community-based climate adaptation (CbCCA) in South Africa. We conceptualise climate change adaptation for smallholder farmers through climate-resilient agriculture (CRA) and water and natural resources management (W&NRM) on three nested levels: micro-, meso-, and macro-levels (Figure 1). At the micro-level, participants are farmers interacting with each other – and possibly others in their community – in peer learning groups, interest groups, and committees. As one moves to the meso- and macro-levels, the range and diversity of people and organisations involved broadens to include other players such as local and national government, civil society organisations (CSOs), the private sector, and academic institutions. The connections across the three levels or scales are important for ensuring that farmers' issues, concerns, and preferences are understood and taken up regionally and nationally (e.g., into policy, planning, and communications), and that farmers can benefit from the support of these diverse stakeholders (e.g,. through relationships, learning exchanges, grants, financial support, and training).

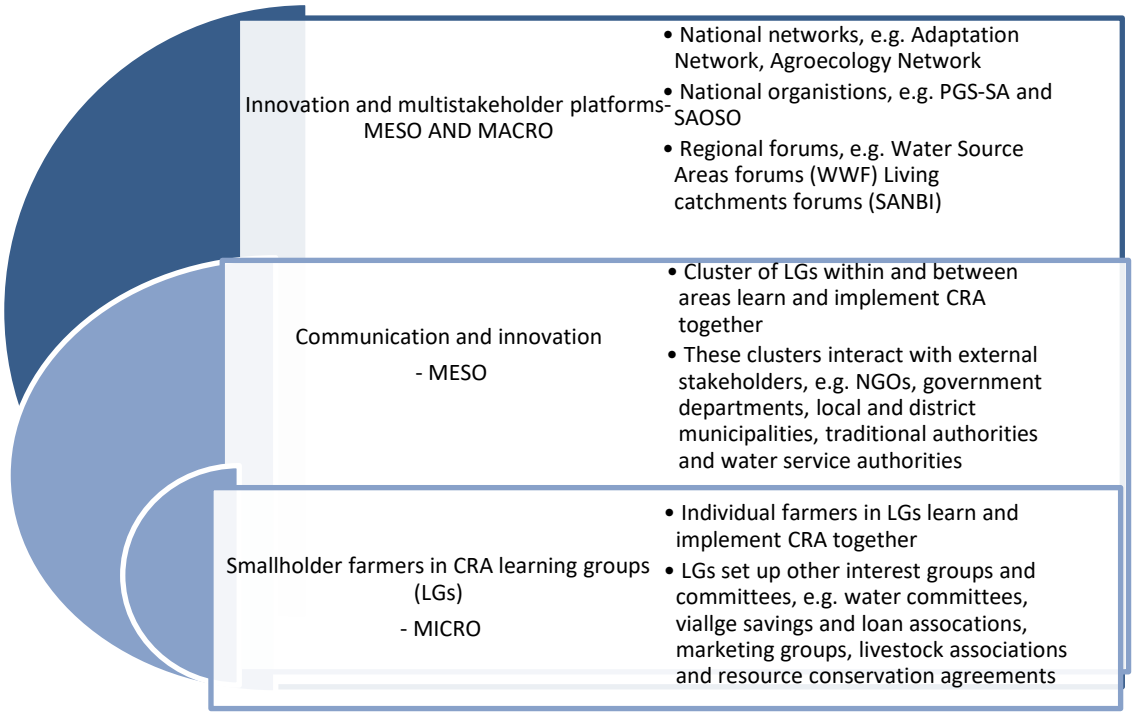


Figure 1: Conceptualisation of stakeholder platforms at multiple levels to support CbCCA

CHAPTER 2: IMPORTANT CONCEPTS

2.1 CLIMATE CHANGE ADAPTATION RESILIENCE

For any process or intervention, the first step is to comprehensively assess the status of the systems and communities to frame the most impactful course of action. The links between the vulnerabilities in the system/community, to the actions to be undertaken, through to the impact on resilience need to be defined, in a participatory manner, from the outset.

Vulnerability assessments are the first step towards framing the context for implementation of adaptation measures, especially within the broader understanding that building of resilience requires longer-term, participatory, and holistic approaches, rather than purely technical, short-term responses, to address all the underlying structural vulnerabilities in our society.
Understandably, the developed frameworks are thus quite complex and comprehensive and require considerable capacity and resources to undertake. In most cases, the levels of vulnerability were determined using the IPCC-endorsed framework:
Exposure + Sensitivity = Potential Impact + Adaptive Capacity = Vulnerability.

In South Africa, the National Risk and Vulnerability Framework (NRVF) is intended to provide an overarching approach and guidance towards undertaking risk and vulnerability assessments using a suite of available methodologies and tools.

The concepts of vulnerability and risk focus on differentiating between who or what is exposed to climate hazards and why they are impacted in different ways and to varying degrees. **Resilience** places a stronger focus on whole systems and their combined capacity to function and change in the face of climate hazards, pressures, or disturbances.

To start to define the boundaries, context, timescales, and uncertainties in adaptation, three key imperatives**: human, environmental, and economic** have been defined, and within these, broad systems, namely **food, natural environment, water, cities, infrastructure, disaster risk management, and finance** (Global Commission on Adaptation, 2019).

Reducing the climate vulnerability and risks of various communities, businesses, sectors, and jurisdictions contributes to increasing the resilience of South Africa's social, economic, and environmental systems (DFFE, 2020).

Vulnerability is the degree to which someone or something can be affected by a particular hazard (from sudden events such as a storm to long-term climate change).
Vulnerability depends on physical, social, economic and environmental factors and processes.
Physical vulnerability relates to the built environment and may be described as "exposure".
Social vulnerability is caused by such things as levels of family ties and social networks, literacy and education, health infrastructure, the state of peace and security.
Economic vulnerability is suffered by people in less-privileged classes or castes, ethnic minorities, the very young and old, etc. They suffer proportionally bigger losses in disasters and have limited capacity to recover. Similarly, an economy lacking a diverse productive base is less likely to recover from disaster impact which may also lead to forced migration.
Environmental vulnerability refers to the extent of natural resource degradation,

Adapting to climate change while also achieving healthy food for all, mitigating climate change, protecting ecosystems, and achieving the Sustainable Development Goals (SDGs) will require systemic changes to the global food system and global land use.

In South Africa, The National Climate Change Adaptation Strategy was finalised in August 2020 (DFFE, 2020). It outlines the goals, strategic outcomes, activities, timelines, and expected impacts nationally, as well as the responsibilities and actions of all relevant government structures – nationally, provincially, and at the municipal level. The Nationally Determined Contribution prioritises specific sectors, i.e., health, water, biodiversity, agriculture, and human settlements, all of which are relevant in working with poor rural communities.

Priority actions are to:

- Enhance water security and effectively deploy flood protection measures.
- Develop early warning climate systems for small-scale farmers and support climate-smart agriculture.
- Monitor and provide surveillance and early warning systems for climate-induced diseases.
- Enhance monitoring of climate change impacts on biodiversity and ecological infrastructure.
- Ensure urban planning and design incorporate climate change concerns.

Adaptation **r**efers to adjustments in ecological, social or economic systems in response to actual or expected climatic stimuli and their effects or impacts. It refers to changes in processes, practices, and structures to moderate potential damages or to benefit from opportunities associated with climate change (UNFCCC 2014).

Climate resilience is the capacity of social or ecological systems to recover or bounce back from disturbances, shocks, and extreme loads or to absorb these disturbances while retaining the same basic structure and ways of functioning (UNDP 2005; UN/ISDR 2004; IPCC 2007; Rockefeller Foundation 2009; IPCC 2014).

Resilience in the context of climate adaptation refers to the capacity of individuals, communities, ecosystems, and systems to anticipate, prepare for, respond to, and recover from climate-related shocks and stresses in a way that ensures long-term sustainability and equity. It emphasises **adaptability, risk management, and collaborative decision-making** among diverse stakeholders. Resilience in this dual context intertwines ecological, social, and institutional dimensions to ensure that responses to climate challenges are holistic, just, and capable of enduring future uncertainties.

2.2 MERL AND IMPACT MEASUREMENT

A resounding call for evidence-based measurements (both qualitative and quantitative) of the impact of interventions and processes in climate change adaptation to climate resilience can be heard across sectors. While the primary emphasis globally is on the governmental contributions, commitments and flows of finances, a broad range of other institutional role players have been grappling with the need for and possibility of a synergised framework for monitoring and evaluation. Given the wide range of methodological approaches from top-down to locally led adaptation and the different contexts for implementation, this has been a complicated and confusing task.

The Global Commission on Adaptation was launched in The Hague in 2018 by the United Nations and the leaders of 22 other convening countries, including South Africa. The Global Centre on Adaptation has developed an impact measurement framework, with the primary aim of monitoring the cooperative adaptation actions of non-state actors and fostering community collaboration and knowledge exchange (Global Commission on Adaptation, 2019).

The framework is underpinned by four core concepts to develop climate resilience metrics and functional characteristics of those metrics, which reflect the need for:

1. A **context-specific approach** to climate resilience metrics;
2. Compatibility with **the variable and often long timescales** associated with climate change impacts and building climate resilience;
3. An explicit understanding of the **inherent uncertainties** associated with future climate conditions; and
4. The ability to cope with the challenges associated with **determining the boundaries** of climate resilience projects.

These metrics can serve as a way of more systematically documenting climate resilience efforts and identifying successful examples. In doing so, they can also help identify opportunities for further climate resilience support (Inter-American Development Bank, 2019).
The transformation of food systems is crucial in the enhancement of food security, livelihood creation, environmental sustainability, and economic transformation. In these unprecedented times, a holistic approach is vital in driving systematic shifts in both global and local food systems (United Nations Environment Programme (UNEP), 2016).

MDF and our partners started by developing our systems approach and boundaries. MDF has done extensive work in strengthening local food systems in KwaZulu-Natal, Eastern Cape, and Limpopo. The organisation's project focus has been to reduce vulnerability and increase resilience to external shocks such as climate change, economic decline, food insecurity, and political instability, which seem to be particularly detrimental to the poorest of the poor. Further complicating matters is the reality that smallholder farmers do not have access to formal credit, are excluded from the mainstream economy, struggle with high levels of unemployment, and are food insecure. The disproportionate distribution of power between men and women also continues to be a point of major concern, although the tide is slowly turning. There is therefore a need for interventions that will drastically reduce and possibly eradicate the challenges. Our project activities have included the introduction of sustainable agricultural practices that encompass agroecology and regenerative agriculture principles, to help strengthen the farming systems of smallholder farmers, alongside local marketing, microfinance, and microlending options. More recently, an increased focus on soil and water conservation, as well as resource conservation and management, has also been included in the suite of interventions.

In efforts to better understand local food systems as well as their challenges and opportunities, MDF has applied the food systems approach, in which a framework was outlined to identify the primary external drivers, the interactions between the various components of the food system, the interactions between the actors involved, the outcomes, and the impacts. This food system framework is adapted from three similar frameworks developed by the Sustainable Food Systems Transformative Network, The Global Alliance Network, and the TRANSMANGO Network and is presented in Figure 2, below.
Linked to this, a methodology for assessing changes (positive or negative) for a suite of bespoke resilience indicators was developed. This process was initially piloted in a WRC-supported research process entitled "*Climate change adaptation for smallholder farmers in South Africa: A decision support guide*" (WRC Report no.: IT/841/1/20) (Kruger, 2021). An integral component of the methodology is the resilience snapshots – an in-depth individual analysis of changes in their food system related to climate resilience. These snapshots are designed to provide a time-based analysis of changes in resilience as well as a process to compare the resilience impact of interventions across different areas and agroecological zones.

MDF FOOD SYSTEMS FRAMEWORK

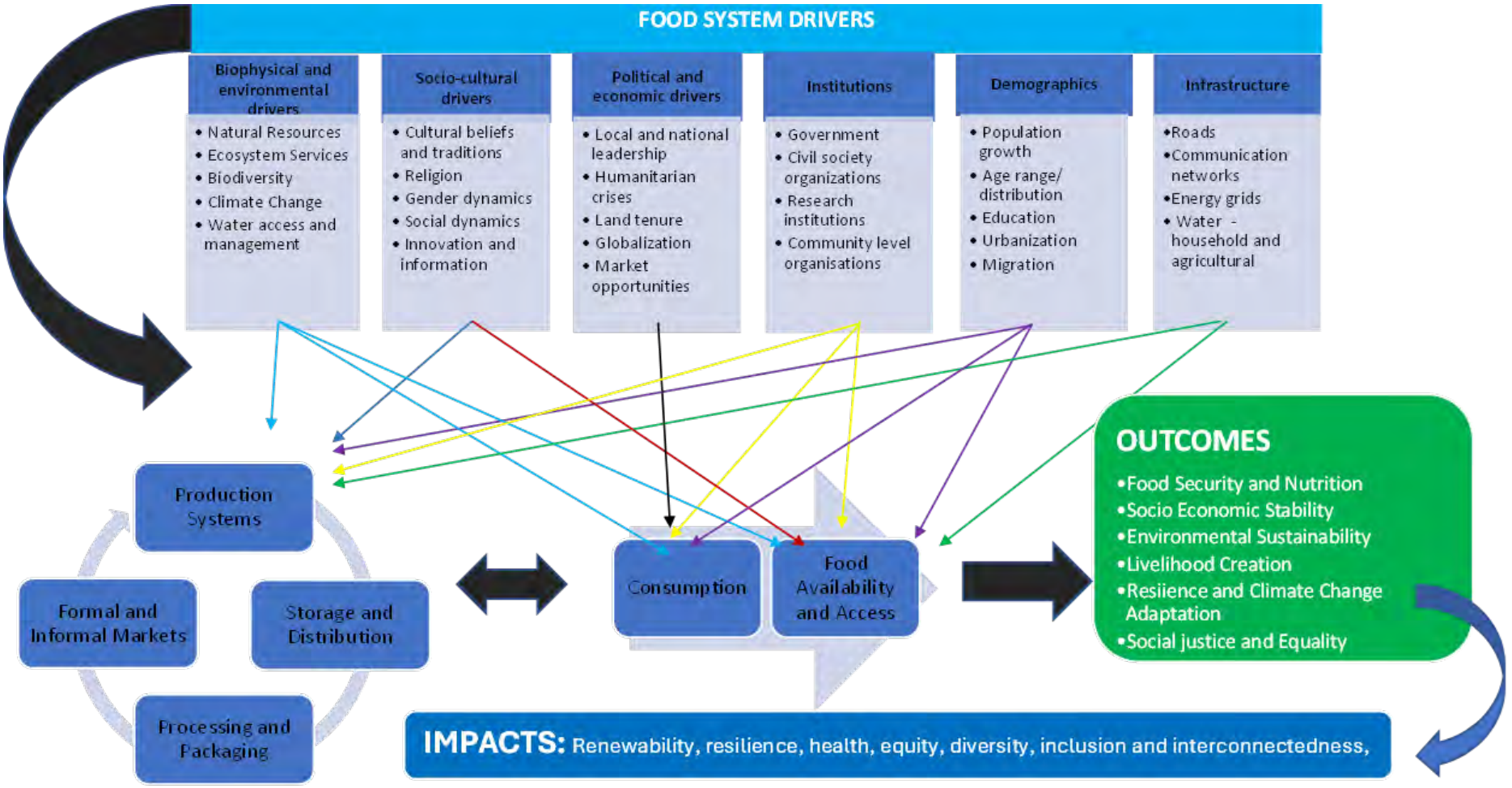


Figure 2: MDF Contextualised Food Systems Framework. (Adapted from the Sustainable Food Systems Network, TRANSMANGO D2.1 Framework and the Global Alliance Food Systems Framework)

2.3 THEORETICAL UNDERPINNINGS FOR A RESILIENCE IMPACT MEASUREMENT FRAMEWORK

The first step in strengthening MDF's tools for assessing smallholder farmer resilience was to strengthen the underlying theoretical framework. This was done by combining Cabell and Oelofse's indicators of agroecosystem resilience (Cabell & Oelofse, An indicator framework for assessing agroecosystem resilience., 2012) with the concept of absorptive, adaptive, and transformative resilience capacities as used by Oxfam and others (Jeans, Castillo, & Thomas, The Future is a Choice: Absorb, Adapt, Transform – Resilience Capacities., 2017)), to produce the theoretical framework shown in Figure 3.

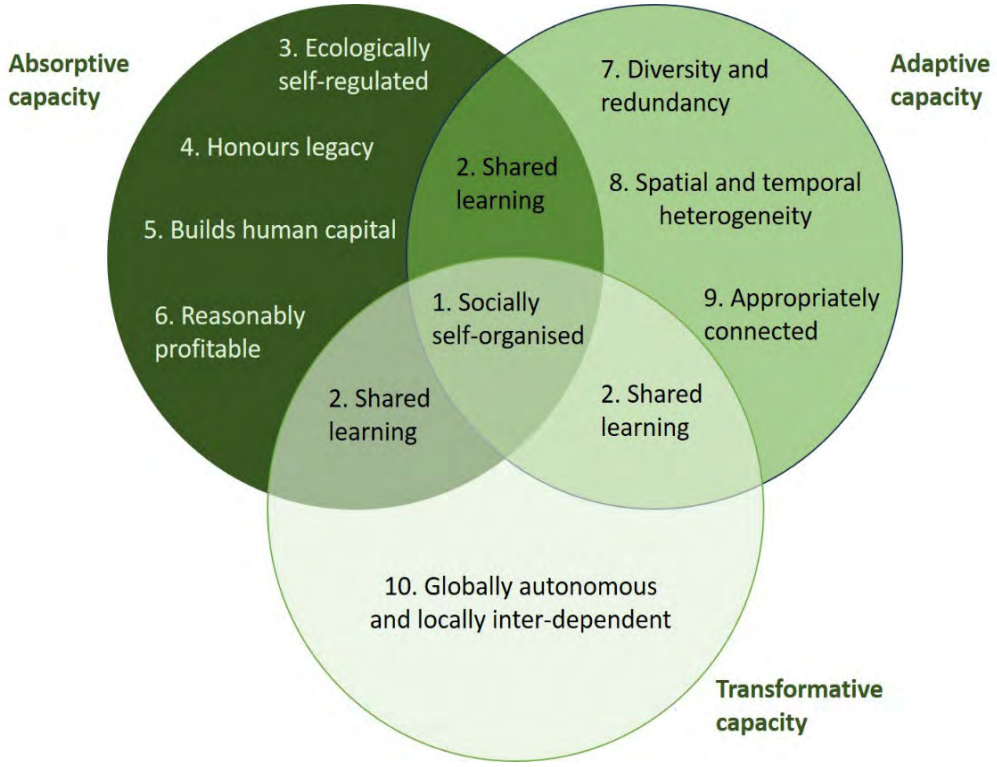


Figure 3: Theoretical framework for assessing resilience of smallholder farmers. Based on Cabell & Oelofse (2012) and Jeans et al. (2017).

Cabell and Oelofse's (2012) indicators of agroecosystem resilience have a solid foundation in that they are based on the resilience principles outlined by Biggs et al. (Biggs, et al., 2012), (Biggs, et al., 2015) and numerous other resilience scholars. They present thirteen behaviour-based indicators[1] which together provide a measure of agroecosystem resilience, particularly for smallholder farmers. Agroecosystems are defined as social-ecological systems bounded by the intentionality to produce food, fuel, or fibre and influenced by farmers' decision-making, including the physical space and resources used as well as related infrastructure, markets, and institutions at multiple, nested scales.

Cabell and Oelofse's framework forms the basis for the SHARP+[2] tool (Hernández Lagana, et al., 2021) (https://www.fao.org/in-action/sharp), which is being widely used by the FAO and others to assess

[1] These are not specific, measurable indicators but rather aspects or dimensions of resilience that should be included.

[2] Self-evaluation and Holistic Assessment of climate Resilience of farmers and Pastoralists.

household climate resilience based on the knowledge and priorities of farmers, using an integrated approach. For example, the IFAD and GEF-financed Resilient Food Systems Impact Programme is currently using SHARP+ in seven countries in sub-Saharan Africa as part of its monitoring and evaluation framework, and SHARP+ has also been included in operational guidelines on monitoring and evaluation of nature-based interventions, climate adaptation in agriculture, and implementation of resilience thinking (Hernandez et al., 2022).

The Oxfam Framework for Resilient Development, *The Future is a Choice*, describes three types of resilience capacity: **absorptive, adaptive, and transformative capacity** (Jeans, Castillo, & Thomas, The Future is a Choice: Absorb, Adapt, Transform – Resilience Capacities., 2017). Resilience is seen as a result of enhancing the capacity (ability, agency, power) of people to proactively and positively manage change in ways that contribute to a just world without poverty. The three capacities are seen as interconnected, existing at multiple levels and mutually reinforcing. This is in line with prominent resilience scholars' characterisation of resilience as having dimensions of persistence, adaptability, and transformability in complex social–ecological systems (Folke, 2016).

Absorptive capacity ensures stability because it aims to prevent or limit the negative impact of shocks. It is the capacity to 'bounce back' after a shock, through anticipating, planning, coping with, and recovering from specific shocks and short-term stresses. **Adaptive capacity** is the capacity to make intentional incremental adjustments in anticipation of or in response to change, in ways that create more flexibility in the future. **Transformative capacity** is the capacity to intentionally change the deep structures that cause or increase vulnerability and risk, as well as how risk is shared within societies and the global community.

For the purpose of creating a coherent theoretical framework for resilience in this context, the different aspects of agroecosystem resilience described by Cabell and Oelofse (2012) were mapped onto the three types of resilience capacity as shown in Figure 3, to produce a guiding framework for monitoring and evaluating resilience. This framework includes the different aspects of resilience as well as the interplay between stability and change.

CHAPTER 3: THE RESILIENCE IMPACT MEASUREMENT TOOL

The thirteen aspects of agroecosystem resilience described by Cabell and Oelofse (2012) were reduced to ten as follows. One was removed because it was felt not to be relevant to South African smallholder farmers ("carefully exposed to disturbance" – South African smallholder farmers do not have the luxury of controlling the amount of disturbance to which their activities are exposed). Another ("coupled with local natural capital") was removed because it was felt to be sufficiently covered by another ("globally autonomous and locally interdependent"). Finally, "functional and response diversity" and "optimally redundant" were combined because in practice, having more diversity usually also provides redundancy, or the ability of some entities (e.g., inputs, outputs, or crops) to functionally compensate for the loss of others (Kotschy, 2013).

The resultant framework with specific, measurable indicators, developed for all the aspects of resilience and resilience capacity, starting from the existing indicators in MDF's resilience snapshot, is shown in the table below.

Table 1: Expanded and modified set of resilience indicators for MDF's resilience snapshot

Indicator name and no.	Rationale	Definition	Unit of measure
Absorptive capacity			
1. Socially self-organised (Focus on support networks)			
1.1 Support networks/ groups	Support networks build absorptive capacity by helping farmers to absorb and survive shocks.	Networks or groups that farmers use for emergency and psycho-social support.	Average no. of groups, % of farmers belonging to different types of groups.
1.2 Increased social agency (collaborative actions)	Absorptive capacity is enhanced by support networks that enable individual and collective agency to make farming activities more efficient and productive.	Extent of collaboration, e.g. market days, assistance with ploughing, labour, seed sharing, saving groups, etc.	Average no. of collaborative actions in which farmers are involved.
2. Shared learning (Focus on learning for productivity)			
2.1 Increased knowledge sharing	Sharing of knowledge helps farmers to farm more effectively and to mitigate the impacts of shocks and disturbances. Also, the act of sharing knowledge promotes learning for the person doing the sharing as well as the recipient. Sharing shows that people have internalised information.	How knowledge is shared (e.g., informally with other farmers, in meetings with local orgs., meetings with external orgs. such as DoA interest groups, in coops). What is shared: categories/types of knowledge or sharing.	List of who shared with, list of types of knowledge shared.
3. Ecologically self-regulated			
3.1 Increased water use efficiency Five fingers' indicators (water, soil, crops, livestock, nature) Pest and disease management Pollinators	The 5 fingers principles promote ecological self-regulation through improved nutrient cycling, water use efficiency, soil health, maintenance of indigenous vegetation, and pollinator populations. Important for resilience, but MDF has not had any success with monitoring most of these. Most farmers are not aware of things like pollinators, pests, diseases, and soil health.	Whether the soil's water-holding capacity has improved (Y/N).	% Y vs. N responses
4. Honours legacy			
4.1 Traditional practices, crops, and livestock in use	Traditional practices are a way of maintaining memory of past conditions and experiences.	Which traditional practices are in use? (e.g., seed saving, heirloom/indigenous seeds or breeds, banana basins) – or changes to these.	List of traditional practices being used by farmers.
5. Builds human capital			
5.1 Increased savings	Savings provide a buffer, allowing farmers to absorb and recover from shocks, and to plan and manage their cash flow.	Average increase in savings.	Average increase in savings (Rands).

Indicator name and no.	Rationale	Definition	Unit of measure
5.2 Use of savings for livelihoods improvement	If farmers are using savings for livelihood improvements, rather than just on essentials such as food, it suggests that human capital is being built.	How are savings being used?	List of options.
5. Increased knowledge and agency as a result of CRA	Building skills, knowledge, and agency increases human capital, which enables farmers to farm more effectively.	What farmers are able to do now that they weren't able to do before.	List of options.
5.4 Increase in agricultural productive assets	Agricultural assets enable farmers to farm effectively and to absorb and recover from shocks.	Change in agricultural productive assets.	List, maybe count and categorise (equipment, livestock, etc.)
6. Reasonably profitable			
6.1 Increased income	If farmers are able to make a livelihood through farming, they are able to remain in their communities and provide for their families, avoiding the social and psychological disruption of migration or circular migration.	Average monthly incomes are mostly though marketing of produce locally and through the organic marketing system.	Average monthly income (Rands).
6.2 Increased household food provisioning	If farmers are able to produce sufficient food locally, it reduces their dependency on store-bought food.	Food is produced and consumed in the household.	Overall food produced (kg per week).
6.3 Increased food security	Having a dependable supply of food and a good variety of foods is beneficial for health and well-being.	No. of food types and how often eaten. A recognised food security indicator.	No. of food types/ no. of times per week.
6.4 Increase in size of farming activities	An expansion of farming indicates that farmers have the resources and commitment to make this possible.	Size of farming activities (cropping, trees & livestock).	Cropping area (ha), no. of fruit trees, and no of livestock.
6.5 Increased productivity	Apart from food security, increases in productivity create opportunities for participation in markets or value-added activities.	Increase in yields and/or livestock.	Overall kg. produced in a season, livestock increase/decrease.
6.6 Increased savings	An increase in savings reflects successful livelihoods. Savings also allow farmers to invest in the future.	Average increase in savings.	Average increase in savings (Rands).
6.7 Positive mindsets	This is an integrative measure of whether farmers feel they are "making it".	How positive farmers feel about the future.	SCALE: 0=less positive about the future; 1=the same; 2=more positive; 3=much more positive.
Adaptive capacity			
1. Socially self-organised (Focus on learning networks)			
1.4 Learning networks/groups	Learning networks build adaptive capacity by promoting experimentation and evaluation of results.	Networks or groups to which farmers belong, which enable learning about CRA. (Will be mainly just the MDF learning group in most cases).	Average no. of groups, % of farmers belonging to different types of groups.
2. Shared learning (Focus on learning for adaptation)			
2.2 Use of information from past experimentation in decision-making	Successful adaptation is more likely when experimentation and learning inform farmers' decisions.	Whether information from past experimentation is used.	% of farmers using info from past experimentation.
2.3 Prevalence of record-keeping	Record-keeping facilitates recall of past events/results and analysis of trends.	Whether farmers keep records of anything.	Question Y/N.
2.4 Most significant change in farming practices	Changed practices indicate learning (?).	Most significant change in farming practices.	List of practices.
7. Diversity and redundancy			
7.1 Increased livelihood diversity options	Having a diversity of livelihood options increases farmers' response diversity (capacity to adapt to different shocks).	No. of livelihood options (sources of income), e.g., social grants, remittances, farming incomes, small business income, employment.	Average no. of options per farmer.

Indicator name and no.	Rationale	Definition	Unit of measure
7.2 Increased diversity of farming activities	Having a diversity of farming activities also increases response diversity and provides for the spreading of risks.	No. of farming activities (gardens, field cropping, livestock, trees, etc.)	Average no. of activities per farmer.
7.3 Increased crop diversity	Increased crop diversity increases functional and response diversity (different crops perform different roles, provide different nutritional benefits, and respond differently to stress, disease, and disturbance).	No. of crops planted by farmers that were not planted previously ("new" crops).	Average no. of "new" crops added, overall and per farmer.
7.4 Increased CRA practice diversity	Different practices have different functions within the agroecosystem (functional diversity).	No. of CRA practices used by farmers which were not used previously (e.g. mulching, trench beds, liquid manure, raised beds, mixed cropping, inter-cropping, crop rotation, tunnels, drip kits, eco-circles, greywater use and management, CA, cover crops, inclusion of legumes, pruning of fruit trees, picking up dropped fruit, pest and disease control, feeding livestock on crops and stover, cutting and baling, fodder supplementation, health and sanitation for poultry, brooding, JoJo tanks, RWH drums).	Average no. of "new" practices added, overall and per farmer.
7.5 No. of water sources	Redundancy in the water supply reduces the impact of the failure of one source.	List of water sources available to the farmer.	Average no. of water sources, overall and per farmer.
7.6 No. of nutrient sources	Redundancy in nutrient supply.	List of nutrient sources available to the farmer.	Average no. of nutrient sources, overall and per farmer.
7.7 No. of suppliers	Redundancy in the supply of inputs.	No. of suppliers available to farmers for gardening, field cropping, and livestock needs.	Average no. of suppliers available, overall and per farmer.
7.8 No. of sales outlets	Redundancy in sales outlets.	No. of sales outlets available to farmers for selling produce from gardening, field cropping, and livestock.	Average no. of sales outlets available, overall and per farmer.
8. Spatial and temporal heterogeneity			
8.1 Increased season	Seasonal variation of activities determines how farming benefits are distributed in time.	Has the seasonal extent of farming increased? (i.e., autumn and winter, and all-year options).	Question Y/N.
8.2 Heterogeneity of land use	Spatial variation in land use influences landscape connectivity, which may influence the movement of fire, pests and diseases, pollinators, or water. It also provides response diversity because areas under different land use may respond differently to shocks.	Size and spatial connectivity of fields and natural vegetation.	?
8.3 Crop rotation/mixed cropping	Crop rotation and mixed cropping allow time for soil and vegetation to recover and increase temporal variation.	Whether farmers practise this and to what extent.	Question Y/N with comments, maybe a degree.
8.4 Livestock integration	Livestock and crop integration, such as through grazing management, rotational grazing, fodder production, buying fodder, or baling allow for functional integration of spatially and temporally heterogeneous activities.	Which livestock integration practices are used?	List of practices used per farmer from the drop-down list.
9. Appropriately connected			
9.1 Flexibility of networks	Flexibility of networks (many weak connections) allows configurations to change according to members' needs and desires.	Could be applied to networks of suppliers, marketing networks, governance networks, etc.	No, and the strength of connections between people.
Transformative capacity			
1. Socially self-organised (Focus on networks for structural change)			
1.7 Inclusivity of networks/groups	Inclusive social and governance structures build transformative capacity by reducing marginalisation, exclusion, and inequity.	Extent to which farmer learning groups include women, youth, and marginalised individuals (e.g., disabled, minority languages).	Average % of group members who are women, youth, or from marginalised groups.

Indicator name and no.	Rationale	Definition	Unit of measure
1.8 Extent to which networks cross scales or hierarchies	Connections across scales or hierarchies provide opportunities for advocacy and structural change.	No. of "active" connections between farmer learning groups and macro-level stakeholders (meaning that there has been interaction or exchange of information, etc., within the past year).	Average no. of active cross-scale connections.
2. Shared learning (Focus on learning for transformation)			
2.4 Changes in personal attitudes, motivations or beliefs	Such changes reflect personal transformation, which is the foundation for and motivator of broader transformation.	Farmers' perceptions of how they think they have grown and how their personal attitudes have changed.	Average no. of farmers reporting changes.
10. Globally autonomous and locally interdependent			
10.1 External vs. local inputs	If farmers are highly dependent on external inputs, they will be at the mercy of external structures and circumstances (e.g., wars, politics, inflation, multi-national corporations) and will therefore have little ability to bring about structural change. If inputs are obtained locally, it suggests local interdependence.	No. of external inputs divided by no. of local inputs (e.g., seed, fertiliser, pest control products, feed, etc.)	Ratio of external to internal inputs.

An important consideration in developing the indicators in Table 1 was how to promote coherent monitoring and evaluation across the different scales (micro-, meso-, and macro-levels as shown in Figure 1). The two aspects of resilience shown in the intersections between the three circles in Figure 3, namely **social self-organisation and shared learning**, are important for all three types of resilience capacity and at all three levels, although they are expressed in slightly different ways in each. For example, at the micro-level, farmer self-organisation is measured by the number of local groups that provide support, the inclusivity of groups, and the extent of collaborative actions among farmers. At the macro-level, similar indicators for social self-organisation are used, but they are applied at the regional or national level (e.g., collaborative actions would not be between individual farmers but between organisations or groups). Additional indicators may also be included at higher levels, such as whether all stakeholder groups are adequately represented.

3.1 MONITORING AND EVALUATION, REFLECTION, AND LEARNING (MERL) TOOLS DEVELOPED

The resilience snapshot was improved and updated to incorporate the methodological considerations described in the section above. A copy of the survey form is provided in Attachment 1. These questionnaires are called snapshots as they can be administered at any time in the individual's progression towards resilience. They are not project-specific and are not meant to assess project outcomes, but rather to highlight changes the participant has made to adapt to climate change and to assess the improved resilience from such changes. It could be useful to undertake these snapshots repeatedly over time to get an indication of ongoing improvement or progression for the participant.
In addition to the individual interviews, there are aspects of resilience, notably social organisation, and changes in human capacity and learning related to climate change that are better analysed in groups, as these aspects are more relational in nature and rely on people's understanding, thinking, and opinions. For these aspects, a participatory impact assessment process was developed. The workshop outline for these discussions is provided in Attachment 2.

A third tool has been developed to explore in some depth the impact of the village savings and loan associations (VSLAs) on a selected number of individuals' income-generation and business-development-and-expansion activities. The outline of this questionnaire is provided in Attachment 3.

3.2 TACKLING RESILIENCE SNAPSHOTS

3.1.1 Baselines

The main point to remember is that the tool focuses on **changes** that have been made or that have occurred since the individual participant's involvement in a process/project related to climate-resilient agriculture. The process needs to compare an individual's situation before an intervention and then along the continuum of change for that individual. This analysis can be used both to track changes within a specific project and to track changes for an individual across projects over time. We need to compare a 'before' situation with a 'now or after' situation.

At the start of an intervention, a baseline is needed to outline participants' vulnerabilities, risks, resources, and current activities within their political, socio-economic, and ecological contexts. This helps identify impactful actions in a complex, changing environment. It's crucial to use questions and criteria that feed directly into future monitoring and evaluation. While there's a temptation to ask every possible question or assume the same participants will be available for later comparisons, this often backfires. Participants may resist lengthy surveys before understanding their role and may experience questionnaire fatigue. Moreover, participation is fluid – those who start a project are not always the ones who see it through. MDF and our partners have therefore followed a slightly different approach.
The baseline assessment consists of a reasonably short individual survey (Attachment 4), focus group discussions for assessing climate change impact and adaptive strategies, and a community and farm-level 'walkabout', to underpin the overall systemic learning approach used in our interventions (Kruger, 2021).

3.1.2 Getting started with resilience snapshots

WHEN?
These snapshots can be undertaken:

- As a mid- and end-season review of implementation for projects (formative and summative assessments);
- As a way to compare adaptation impact across different seasons and years (to compare resilience and impact under different weather conditions and or seasons); or
- As an annual assessment for specific individuals (to develop a trajectory of their climate resilience journey).

Once a period has been earmarked, all the respondent interviews need to be undertaken in the shortest space of time possible, as failing to do so will add increased variability to the results and reduce comparability.

WHO?
As a minimum, 15% of participants in a process need to be included. As this is a contextual assessment, this would need to be 15% of participants in one locality or village. For processes with a smaller number of participants, you would need to aim for at least 20–24 snapshots.
It would be important to target your snapshots to include the full range of beneficiaries, including, for example, gender, age, vulnerability, and level of implementation for each locality.
An example of how to do this kind of targeted selection is shown in the small table below.

Table 1: An example of sampling numbers

No. of respondents		**20**				
		Women	0,7		Men	0,3
		14			6	
	Good	Okay	Not so good	Good	Okay	Not so good
Poor/vulnerable	2	2	2	1	1	1
Head of household	2	2	2	1	1	
Youth	1	1	1	1	0	0

HOW?
The questionnaires can be loaded onto laptops and/or tablets or printed out. Staff or volunteers who will be administering these surveys will need to be carefully mentored to provide the correct details for each of the questions.

3.1.3 Analysis and reporting for resilience snapshots

An Excel-based workbook and dashboard have been developed for entering the information from the individual interviews to provide a clear and visual report. This database can be accessed on the MDF website (https://www.mahlathini.org/our-work/water-research-commission-climate-change-adaptation-for-smallholder-farmers-in-s/final-resilience-dashboards/).
In this database, all individual interviews are transcribed into the MAIN DATA TABLE. Care needs to be taken to use the correct text or numbers for each cell. Interviews already loaded on this page can be used as examples.
Pivot tables for the **landing page** and **absorptive** and **adaptive** indicator sets are automatically created. This will then update the Landing Page and absorptive and adaptive dashboards to include the new information. On these dashboards, it is possible to drop down lists to look at information that is region- and village-specific, if that is required.

The figures below provide an example of demographic data that is available on the **landing page**.
The split of participants into different age categories can be viewed for all regions, per region and also per male and female participants per region, as shown in Figure 3.

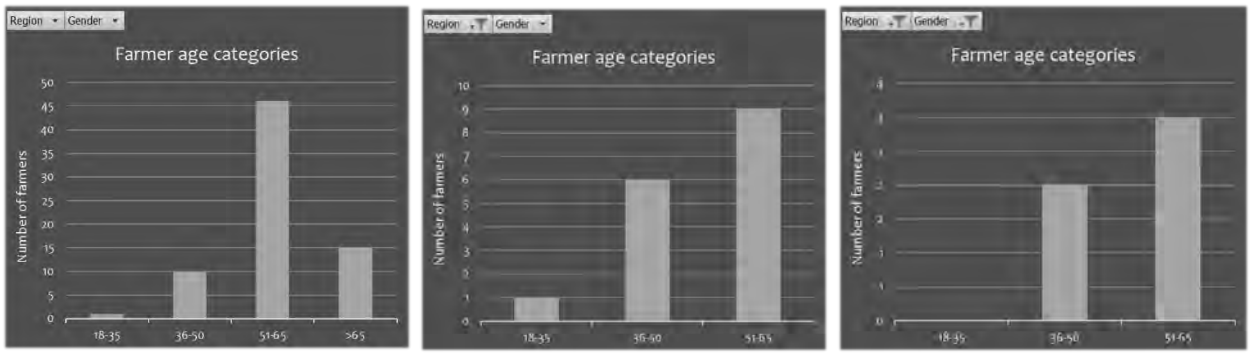


Figure 3: The figures above indicate the number of farmers per age category for 1 – all regions; 2 –Matatiele, EC; and 3 – male participants in Matatiele, EC.

The figures below provide an example of the **absorptive dashboard** using the improved soil health indicator.

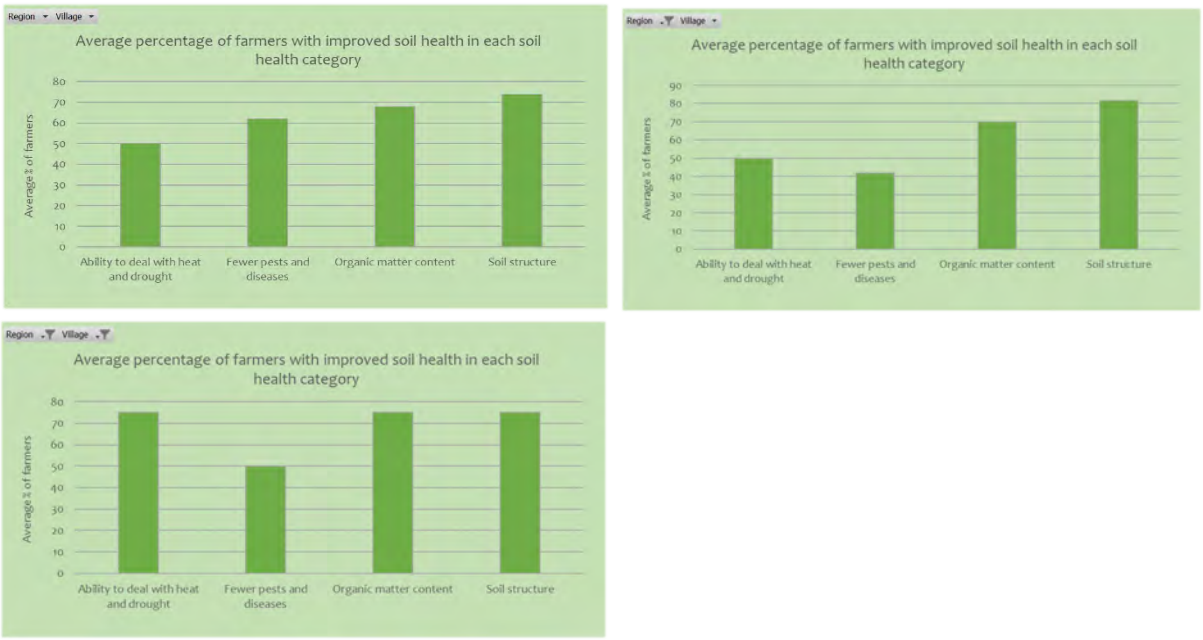


Figure 4: Tables showing the percentage of farmers with improved soil health for all regions (3 provinces), then Limpopo province, and The Willows village within Limpopo province.

It is thus possible to provide comparative analysis across regions and between villages for all the indicators provided in the resilience dashboard.
It is also possible to summarise data per region. This includes more in-depth socio-economic data than can be found in the three main dashboard pages. Several specific tables have been created from the main data table to analyse specific information, including:

- Productivity
- Product prices
- CRA practices
- Collaborative action groups
- Knowledge sharing
- Water use efficiency
- Soil health
- Traditional practices
- Savings
- Loans
- Livelihoods
- Farming activities
- Water sources
- Growing season
- Crop rotation
- Livestock integration

From this information, a series of pivot tables and other data visualisations are created and summarised onto one page for the region. It is again possible to compare information between villages in each of the regions for the pivot tables in these pages.
An example of the number of years participants have been practising CRA in Matatiele, EC is provided in Figure 5.

Figure 5: Average percentage of farmers who have practised CRA for 1, 2, 3, >3years for 1 – Matatiele (4 villages) and 2 –Ned village only.

CHAPTER 4: ONE-PAGE SUMMARIES FOR FOUR REGIONS

In this section, the one-page summaries for the CbCCA programme conducted between 2022 and 2025 under BMZ-SODI are provided. This initiative consisted of working in 26 villages across four regions and three provinces to improve the resilience of smallholder farmers using a suite of activities and interventions, and formed the basis for the development of the climate resilience impact dashboards.
A total of 100 individual interviews were undertaken between October 2024 and March 2025, and this data was used to develop the following regional summaries for Mametja-Sekororo (Limpopo), Matatiele (Eastern Cape), Bergville (KwaZulu-Natal), and Midlands (KwaZulu-Natal).

Region summary: Limpopo

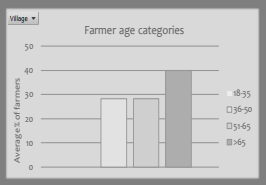
Participants

Male farmers: 5 (25%)

Female farmers: 15 (75%)

Average male age: 67

Average female age: 61

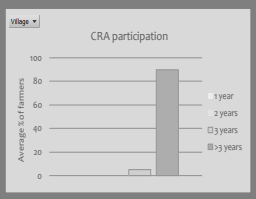


CRA

Average increase in number of **CRA practices** practiced per farmer: 8

Average number **of traditional practices** practiced per farmer: 2

*See CRA practices tree diagram at bottom of page.



Increased farming diversity

% of farmers who increased their number of farming activities: 85%

Gardening

Average garden size: 390 m²

Range in garden size: 30 - 900 m²

Farmers who increased the size of their gardens: 15 (75%)

Average garden size increase: 26%

Field

Average field size: 7867 m²

Range in field size: 400 - 40000 m²

Farmers who increased the size of their fields: 3 (15%)

Average field size increase: -20%

Livestock

% of farmers who increased their number of

cows:	30%	donkeys:	0%
goats:	30%	indigenous chickens:	30%
sheep:	0%	Boschvelder	30%
pigs:	0%	layer chickens:	5%
horses:	0%	broiler chickens:	0%

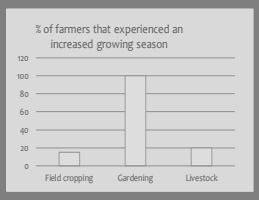
Trees

% of farmers who increased their number of fruit trees: 50%

Increased crop diversity

Average number of new crops incorporated per farmer: 8

Increased growing season



Increased incomes

Average monthly income from farming per farmer: R3073

Average % of produce consumed: 68%

% of farmers selling produce: 95%

Average increase in income from **gardening**: R4304

Average increase in income from **field cropping**: R0

Average increase in income from **livestock**: R3707

Average overall increase in income: R8441

Increased livelihood diversity

Average increase in number of income sources per farmer: 1

Increased savings

Average monthly savings per farmer: R598

Farmers who haven't increased their monthly savings: 3 (15%)

Social organisation

Average number of new collaborative action/social agency group types: 1

Water use efficiency

Average number of efficient water use practices practiced per farmer: 5

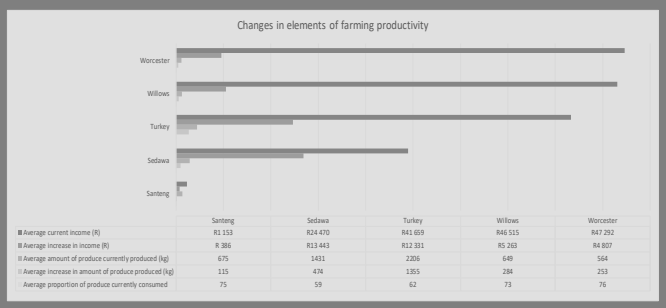
Redundancy

Average number of nutrient types available to each farmer: 2

Average number of suppliers available to each farmer: 3

Average number of sales outlets available to each farmer: 1

Increased productivity



	Santeng	Sedawa	Turkey	Willows	Worcester
Average current income (R)	R1 153	R24 470	R41 659	R46 515	R47 292
Average increase in income (R)	R 386	R13 443	R12 331	R5 263	R4 807
Average amount of produce currently produced (kg)	675	1431	2206	649	564
Average increase in amount of produce produced (kg)	115	474	1355	284	253
Average proportion of produce currently consumed	75	59	62	73	76

Average increase in gardening produce: 490 kg

Average increase in field cropping produce: 3 kg

Average increase in livestock number: 34

Positive mindsets

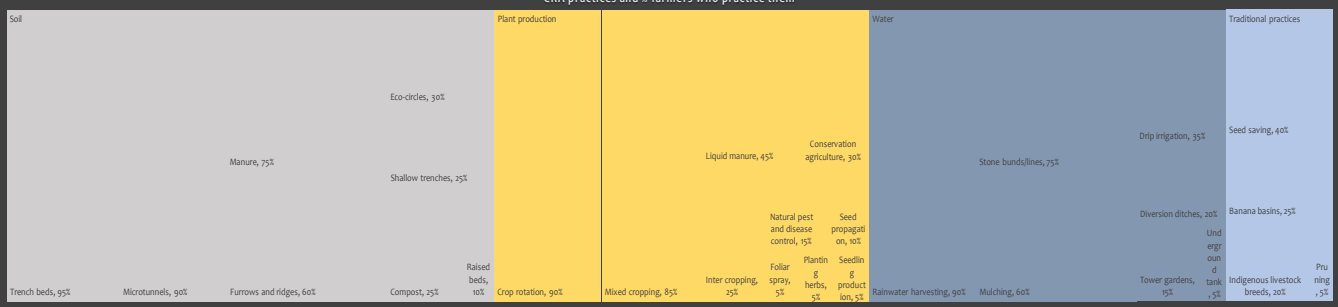
Average mindset rating before: 1

Average mindset rating: 2

Ratings:
-1: Less positive about the future
0: The same
1: More positive about the future
2: Much more positive about the future

Farmer mindset comment

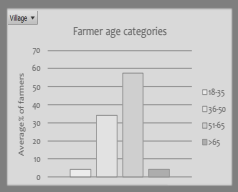
CRA practices and % farmers who practice them



Region summary: Matatiele

Participants

Male farmers: 5 (29%)
Female farmers: 12 (71%)
Average male age: 56
Average female age: 50

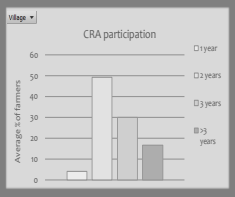


CRA: Matatiele -EC

Average increase in number of **CRA practices** practiced per farmer: 4

Average number **of traditional practices** practiced per farmer: 1

*See CRA practices tree diagram at bottom of page.



Increased farming diversity

% of farmers who increased their number of farming activities: 18%

Trees

% of farmers who increased their number of fruit trees: 29%

Gardening

Average garden size: 509 m²
Range in garden size: 20 - 3200 m²
Farmers who increased the size of their gardens: 12 (71%)
Average garden size increase: 28%

Field

Average field size: 992 m²
Range in field size: 50 - 3200 m²
Farmers who increased the size of their fields: 4 (24%)
Average field size increase: 19%

Livestock

% of farmers who increased their number of

cows:	18%	donkeys:	6%
goats:	6%	indigenous chickens:	12%
sheep:	29%	Boschvelder	35%
pigs:	0%	layer chickens:	12%
horses:	12%	broiler chickens:	0%

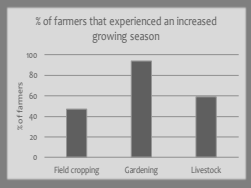
Increased crop diversity

Average number of new crops incorporated per farmer: 3

Social organisation

Average number of new collaborative action/social agency group types: 1

Increased growing season



Increased incomes

Average monthly income from farming per farmer: R1860
Average % of produce consumed: 59%
% of farmers selling produce: 88%
Average increase in income from **gardening**: R4469
Average increase in income from **field cropping**: R332
Average increase in income from **livestock**: R1032
Average overall increase in income: R3142

Increased livelihood diversity

Average increase in number of income sources per farmer: 1

Increased savings

Average monthly savings per farmer: R824
Farmers who haven't increased their monthly savings: 4 (24%)

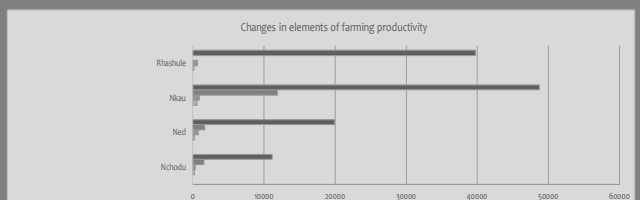
Water use efficiency

Average number of efficient water use practices practiced per farmer: 4

Redundancy

Average number of nutrient types available to each farmer: 2
Average number of suppliers available to each farmer: 3
Average number of sales outlets available to each farmer: 1

Increased productivity



	Nchodu	Ned	Nkau	Rhashule
Average current income (R)	R11 142	R19 951	R48 729	R39 749
Average increase in income (R)	1552	1664	11891	0
Average amount of produce currently produced (kg)	314	740	947	634
Average increase in amount of produce produced (kg)	222	215	608	172
Average proportion of produce currently consumed	38	51	61	28

Average increase in gardening produce: 323 kg
Average increase in field cropping produce: 26
Average increase in livestock number: 15

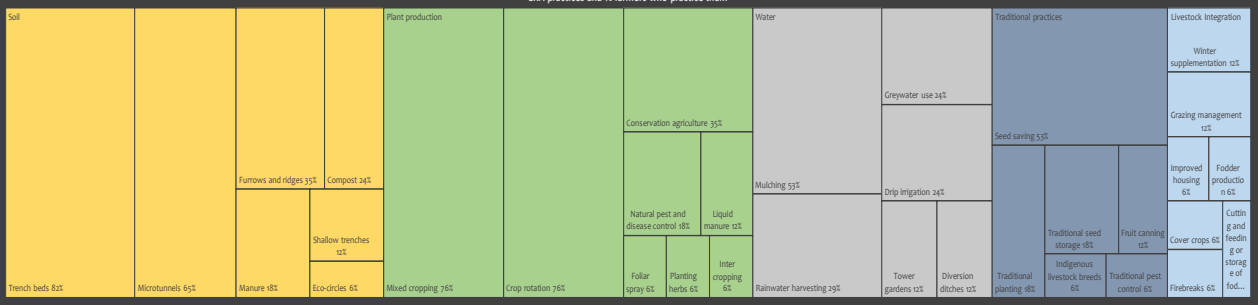
Positive mindsets

Average mindset rating before: 1
Average mindset rating: 2

Ratings:
-1: Less positive about the future
0: The same
1: More positive about the future
2: Much more positive about the future

Farmer mindset comment

CRA practices and % farmers who practice them



Region summary: Bergville

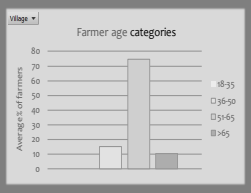
Participants

Male farmers: 5 (25%)

Female farmers: 15 (75%)

Average male age: 57

Average female age: 57

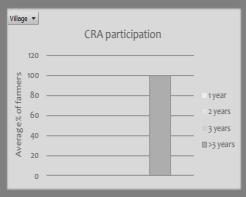


CRA: Bergville KZN

Average increase in number of **CRA practices** practiced per farmer: 4

Average number **of traditional practices** practiced per farmer: 2

*See CRA practices tree diagram at bottom of page.



Increased farming diversity

% of farmers who increased their number of farming activities: 45%

Trees

% of farmers who increased their number of fruit trees: 15%

Gardening

Average garden size: 405 m²

Range in garden size: 35 - 3000 m²

Farmers who increased the size of their gardens: 17 (85%)

Average garden size increase: 555%

Field

Average field size: 3837 m²

Range in field size: 200 - 15000 m²

Farmers who increased the size of their fields: 5 (25%)

Average field size increase: 7%

Livestock

% of farmers who increased their number of

cows:	20%	donkeys:	0%
goats:	15%	indigenous chickens:	5%
sheep:	0%	Boschvelder	0%
pigs:	5%	layer chickens:	0%
horses:	0%	broiler chickens:	1%

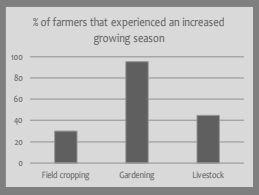
Increased crop diversity

Average number of new crops incorporated per farmer: 3

Social organisation

Average number of new collaborative action/social agency group types: 0

Increased growing season



Increased incomes

Average monthly income from farming per farmer: R812

Average % of produce consumed: 66%

% of farmers selling produce: 19%

Average increase in income from **gardening**: R1588

Average increase in income from **field cropping**: R2400

Average increase in income from **livestock**: R2787

Average overall increase in income: R6366

Increased livelihood diversity

Average increase in number of income sources per farmer: 1

Increased savings

Average monthly savings per farmer: R665

Farmers who haven't increased their monthly savings: 11 (55%)

Water use efficiency

Average number of efficient water use practices practiced per farmer: 3

Redundancy

Average number of nutrient types available to each farmer: 2

Average number of suppliers available to each farmer: 2

Average number of sales outlets available to each farmer: 1

Increased productivity

	Eqeleni	Ezibomvini	Stulwane	Vimbukhalo
Average current income (R)	R15 634	R10 120	R8 703	R3 264
Average increase in income (R)	R9 505	R9 448	R2 845	R2 206
Average amount of produce currently produced (kg)	669	900	755	382
Average increase in amount of produce produced (kg)	273	565	259	196
Average proportion of produce currently consumed	70	52	67	75

Average increase in gardening produce: 114 kg

Average increase in field cropping produce: 229

Average increase in livestock number: 5

Positive mindsets

Average mindset rating before: 0

Average mindset rating: 2

Ratings:
-1: Less positive about the future
0: The same
1: More positive about the future
2: Much more positive about the future

Farmer mindset comment

CRA practices and % farmers who practice them

Region summary: Midlands

Participants

Male farmers: 1 (6%)

Female farmers: 15 (94%)

Average male age: 52

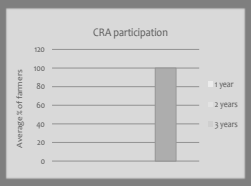
Average female age: 60

CRA

Average increase in number of **CRA practices** practiced per farmer: 3

Average number **of traditional practices** practiced per farmer: 3

*See CRA practices tree diagram at bottom of page.



Increased farming diversity

% of farmers who increased their number of farming activities: 31%

Trees

% of farmers who increased their number of fruit trees: 69%

Gardening

Average garden size: 673 m²

Range in garden size: 12 - 3000 m²

Farmers who increased the size of their gardens: 16 (100%)

Average garden size increase: 206%

Field

Average field size: 8700 m²

Range in field size: 400 - 12000 m²

Farmers who increased the size of their fields: 8 (50%)

Average field size increase: -10%

Livestock

% of farmers who increased their number of

cows:	6%	donkeys:	0%
goats:	13%	indigenous chickens:	13%
sheep:	0%	Boschvelder	0%
pigs:	0%	layer chickens:	6%
horses:	0%	broiler chickens:	13%

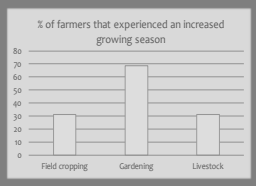
Increased crop diversity

Average number of new crops incorporated per farmer: 2

Social organisation

Average number of new collaborative action/social agency group types: 1

Increased growing season



Increased incomes

Average monthly income from farming per farmer: R465

Average % of produce consumed: 46%

% of farmers selling produce: 95%

Average increase in income from **gardening**: R1513

Average increase in income from **field cropping**: R5040

Average increase in income from **livestock**: R428

Average overall increase in income: R0

Increased livelihood diversity

Average increase in number of income sources per farmer: 0

Increased savings

Average monthly savings per farmer: R1004

Farmers who haven't increased their monthly savings: 9 (56%)

Water use efficiency

Average number of efficient water use practices practiced per farmer: 3

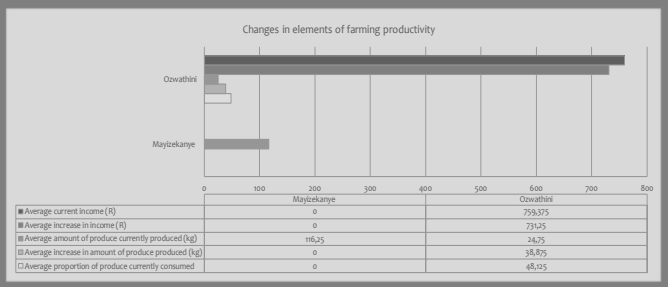
Redundancy

Average number of nutrient types available to each farmer: 2

Average number of suppliers available to each farmer: 3

Average number of sales outlets available to each farmer: 2

Increased productivity



	Mayizekanye	Ozwathini
Average current income (R)	0	759,375
Average increase in income (R)	0	731,25
Average amount of produce currently produced (kg)	116,25	24,75
Average increase in amount of produce produced (kg)	0	38,875
Average proportion of produce currently consumed	0	48,125

Average increase in gardening produce: 118 kg

Average increase in field cropping produce: 0 kg

Average increase in livestock number: 14

Positive mindsets

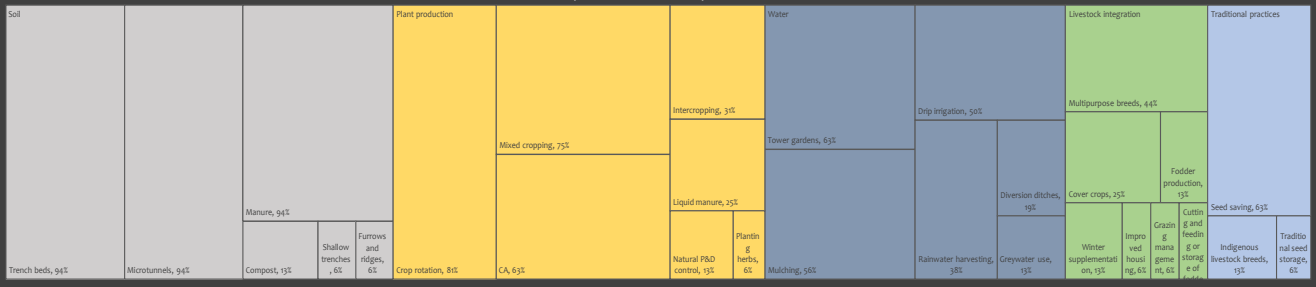
Average mindset rating before: 1

Average mindset rating now: 2

Ratings:
-1: Less positive about the future
0: The same
1: More positive about the future
2: Much more positive about the future

Farmer mindset comment

CRA practices and % farmers who practice them



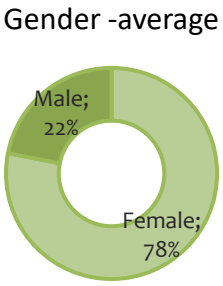
CHAPTER 5: CASE STUDY: USING THE CLIMATE RESILIENCE DASHBOARD TO SUMMARISE IMPLEMENTATION IMPACT OF THE SODI-BMZ CBCCA PROGRAMME

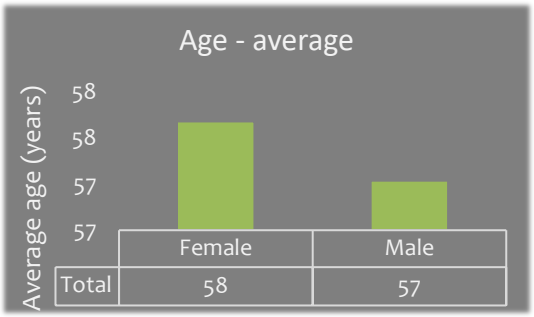
The framework for developing the MERL process and indicators is focused on adaptation to climate change, with three sets of capacities (absorptive, adaptive**,** and transformative) and 10 broad indicator sets, as outlined in section 2.3 of this document.
The case study is conceptualised as a summary of information for each of the indicator sets and provides examples from each of the four regions rather than a comprehensive comparison. The intention is to demonstrate how this dashboard can be used in impactful reporting.

5.1 IMPLEMENTATION DEMOGRAPHICS

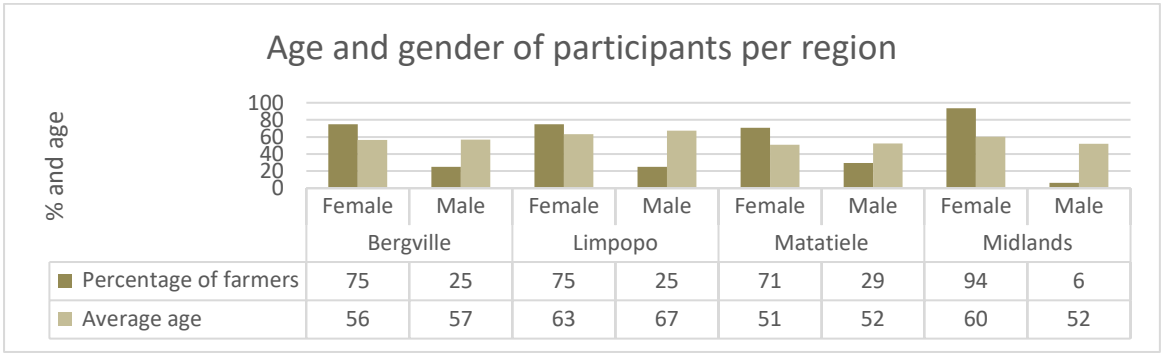
A total of 663 smallholder farmer participants and 2 848 indirect beneficiaries have been supported through the SODI-CbCCA project, organised into 27 village-based learning groups across 3 provinces (KZN, EC and Limpopo)

Smallholder farmer participants are predominantly women (78%) between the ages of 51 and 65.



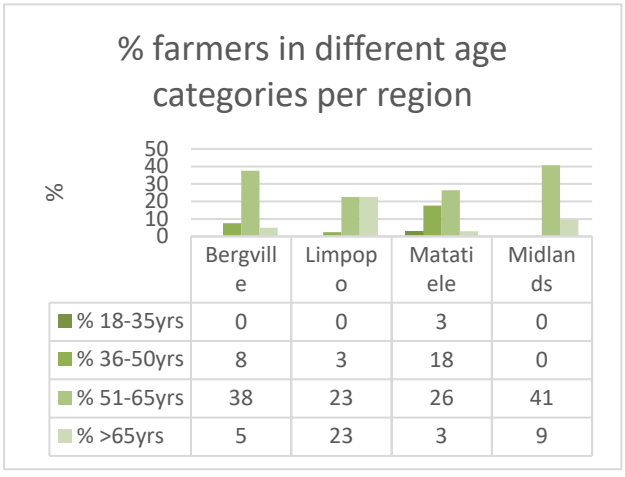


The average age of participants in different regions differs somewhat, with the lowest of around 51 being in Matatiele (EC) and the highest of 65 on average, in Limpopo. The average age for participants in KZN is 56.

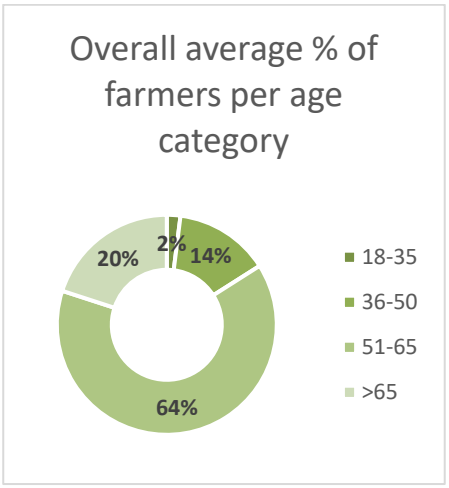


	Female	Male	Female	Male	Female	Male	Female	Male
	Bergville		Limpopo		Matatiele		Midlands	
Percentage of farmers	75	25	75	25	71	29	94	6
Average age	56	57	63	67	51	52	60	52

The bulk of participants in this programme fall within the range of 51 to 65 years of age (64%). This is one of the most vulnerable groups in rural communities, which we dubbed as the 'missing middle' as they mostly do not receive any social grant support – their children have grown up, and they are still being too young to claim pensions. Youth (18–35 years of age) are generally quite underrepresented in the learning groups (2%).



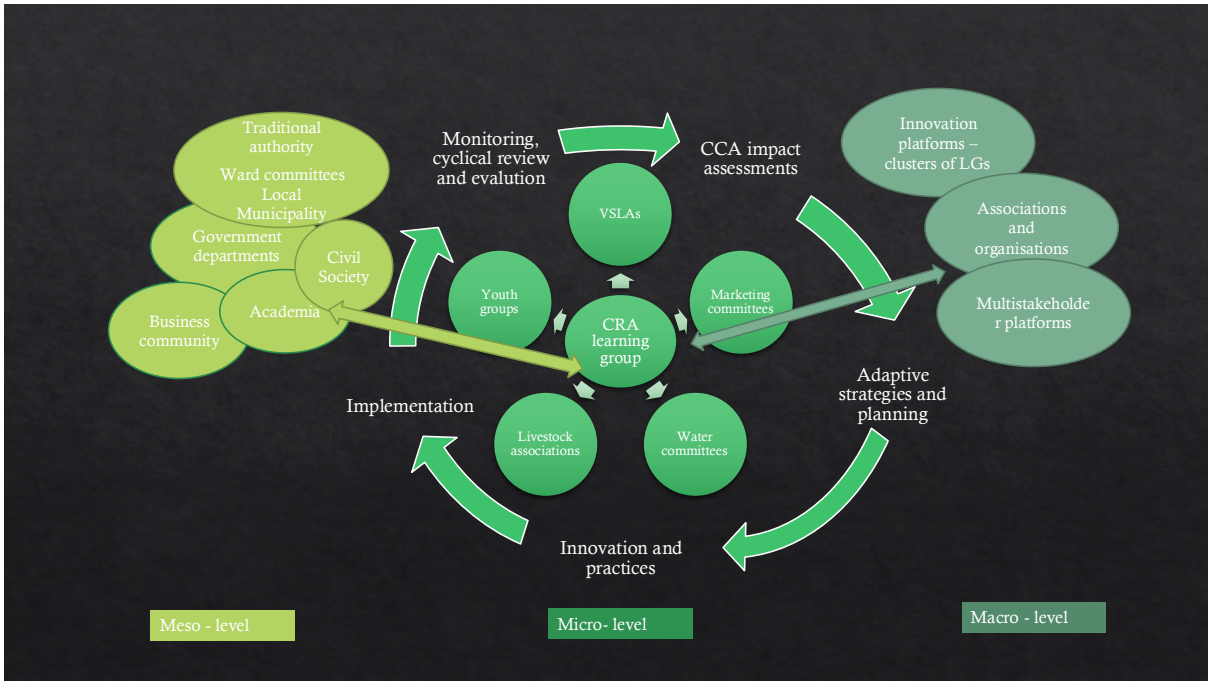
	Bergville	Limpopo	Matatiele	Midlands
% 18-35yrs	0	0	3	0
% 36-50yrs	8	3	18	0
% 51-65yrs	38	23	26	41
% >65yrs	5	23	3	9



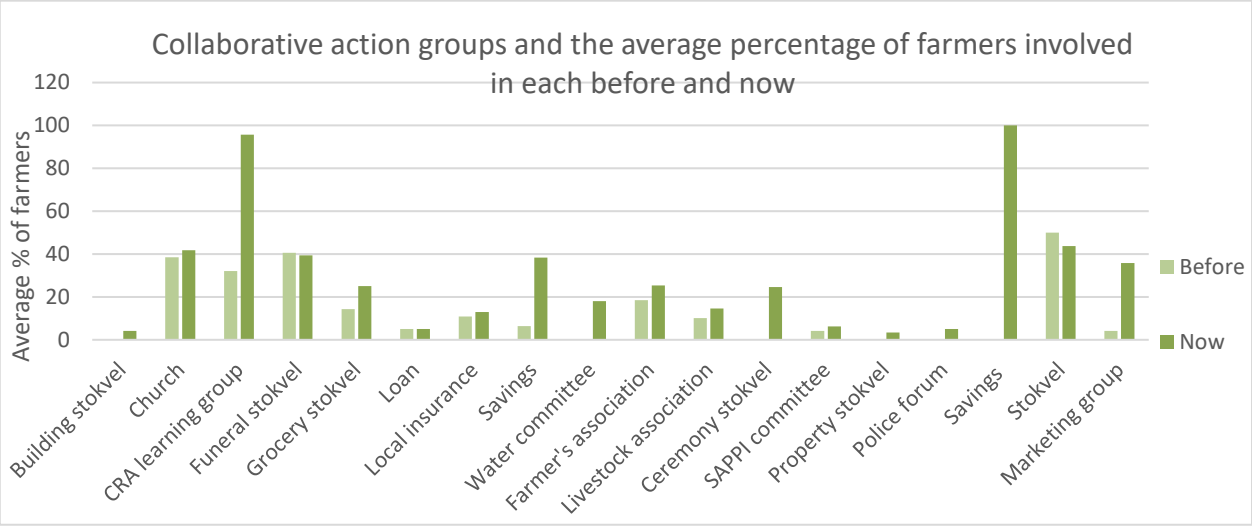
5.2 SOCIALLY SELF-ORGANISED

Within the programme, 27 CRA learning groups were supported. Eighteen VSLAs were supported, five water committees were set up and three livestock agreements were institutionalised. Four Innovation platform CoPs were set up and collaboration with eight NGOs, five research organisations and four multistakeholder platforms was undertaken.

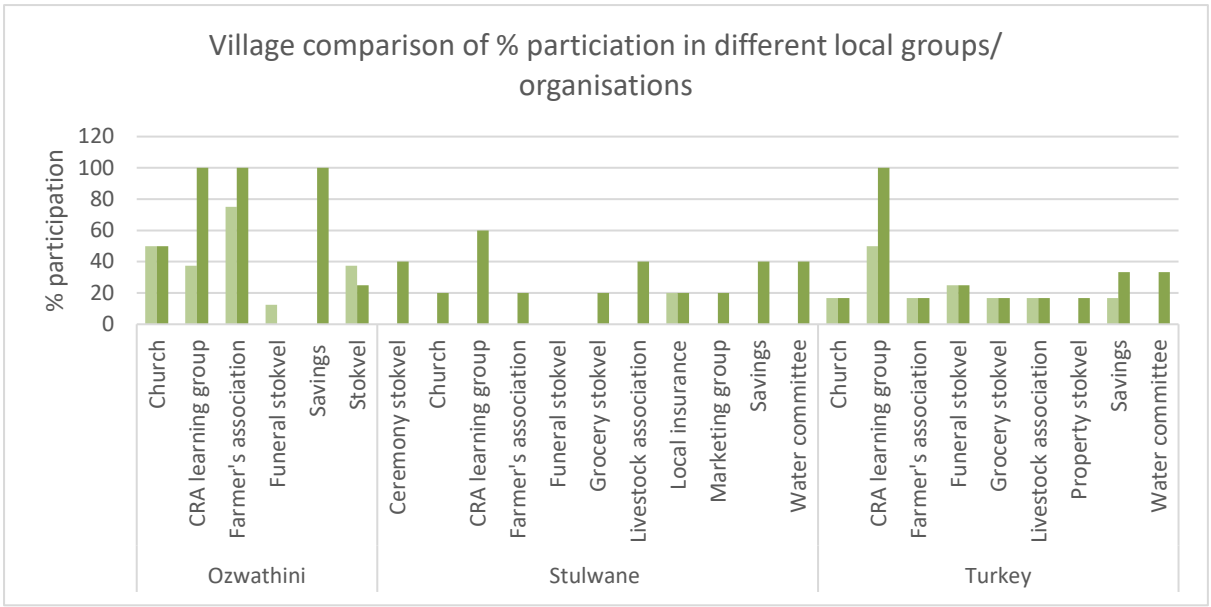
This indicator falls within the absorptive, adaptive, and transformative categories of the framework. Within this programme, social organisation is conceptualised on micro- (local-level CRA learning groups), meso- (CRA learning groups interacting with local stakeholders, including other villages), and macro-level (interaction with regional and national networks, forums, platforms, and institutions).
This is visually represented in the diagram below. The diagram also indicates how the CRA learning groups incubate the development of more formal committees and groups at the village level, including, for example, marketing groups, VSLAs, youth groups, and water committees.



One noticeable trend in the CRA learning groups is that participant engagement in learning and mentoring often leads to increased involvement in existing local organisations. Additionally, it encourages the formation of new local-level organisations.



The context varies across villages in the three provinces. In some villages, like Stulwane (Bergville, KZN), there were very few local groups or organisations before the intervention, and most were established afterwards. In others, such as Ozwathini (Midlands, KZN), participation in CRA learning groups led to greater involvement in existing local organisations. Additionally, in villages with a variety of pre-existing organisations, newly formed adaptation-related groups have been integrated alongside the existing structures. This can be seen in the diagram below.



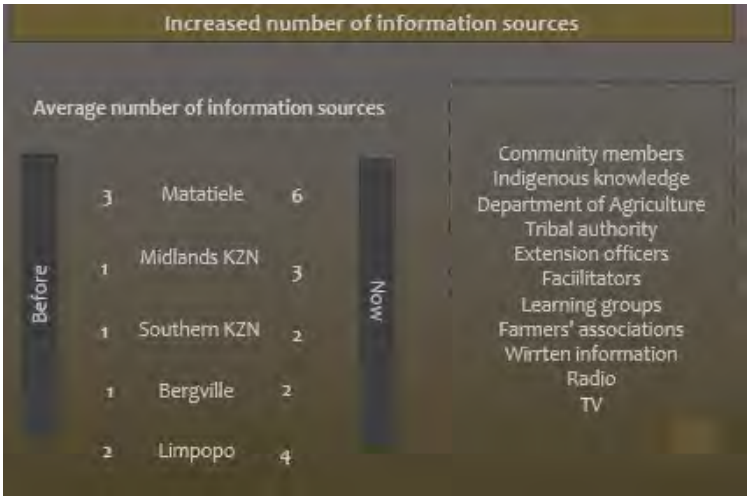
On average, each participant in the programme has joined a minimum of one new local-level organisation within the programme implementation period.

5.3 SHARED LEARNING AND KNOWLEDGE CO-CREATION

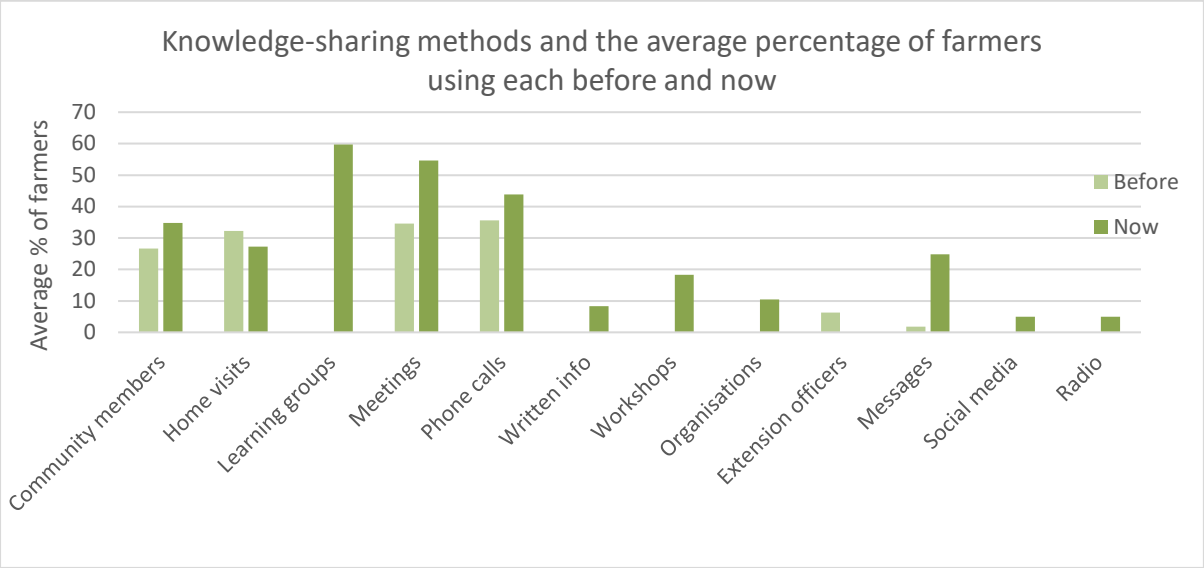
Within the programme, 260 learning, review and training sessions were held, six learning exchange visits were undertaken, and eight farmers' open days were organised. Six papers were presented at conferences. Learning materials and manuals were developed.

This is a key focus of the programme's learning and innovation approach, which follows a cyclical process of learning and review in each village. It includes targeted learning and demonstration sessions, as well as cross-learning events and visits. Two key indicators in this area, as highlighted in the resilience snapshots, are information sources and knowledge-sharing methods. Additionally, the qualitative aspects of knowledge co-creation were evaluated and analysed through participatory impact focus group discussions.

Information sources used by programme participants increased from one source of information to three different sources.



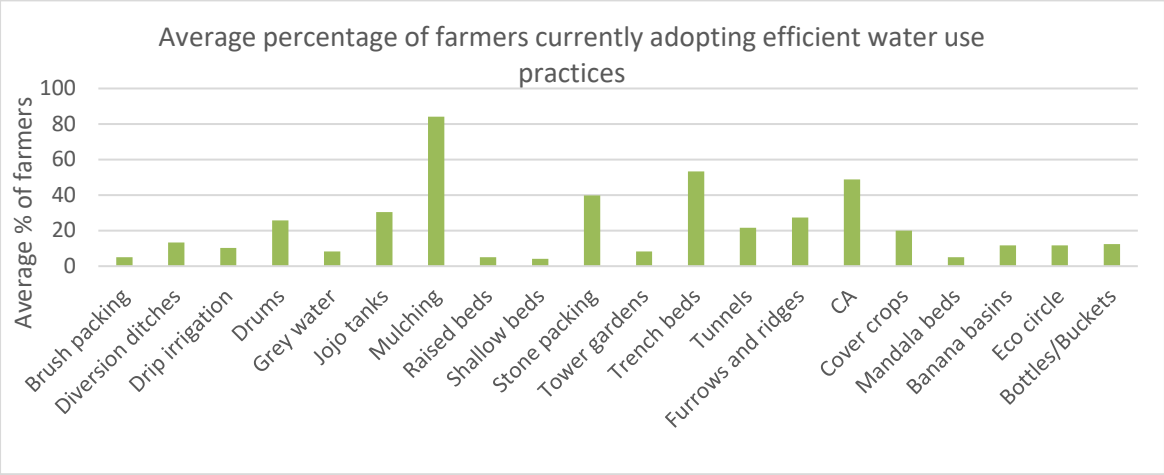
Information sharing in these villages is still primarily through word of mouth. The diagram below, however, indicates a significant increase in communication through cell phones via both calls and messages as well as social media. It also shows some increase in communication between community members. Most information was gleaned and shared in learning groups, meetings, and workshops. A small increase in the use of written information and radio was shown. Significantly, the Department of Agriculture extension officers have hardly featured during the programme implementation period.



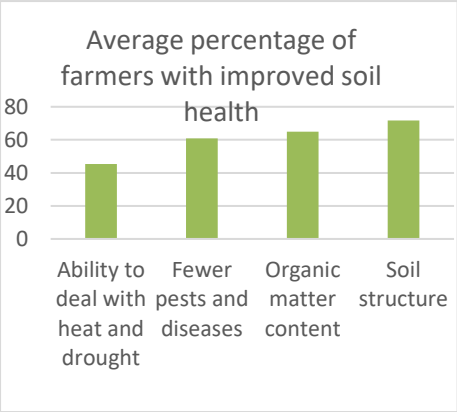
5.4 ECOLOGICAL SELF-REGULATION

This indicator assesses ecological processes and the enhancement of natural resource functioning, particularly water and soil, which smallholder farmers rely on. Farmers were asked about the practices they use to improve water and soil management and their observations of any improvements.

The diagram below indicates the percentage of participants who undertook specific practices to improve soil and water management during the programme. Note that CA stands for conservation agriculture.



Participant farmers were asked to describe what the positive changes in their soil health were, in both their gardens and their fields.

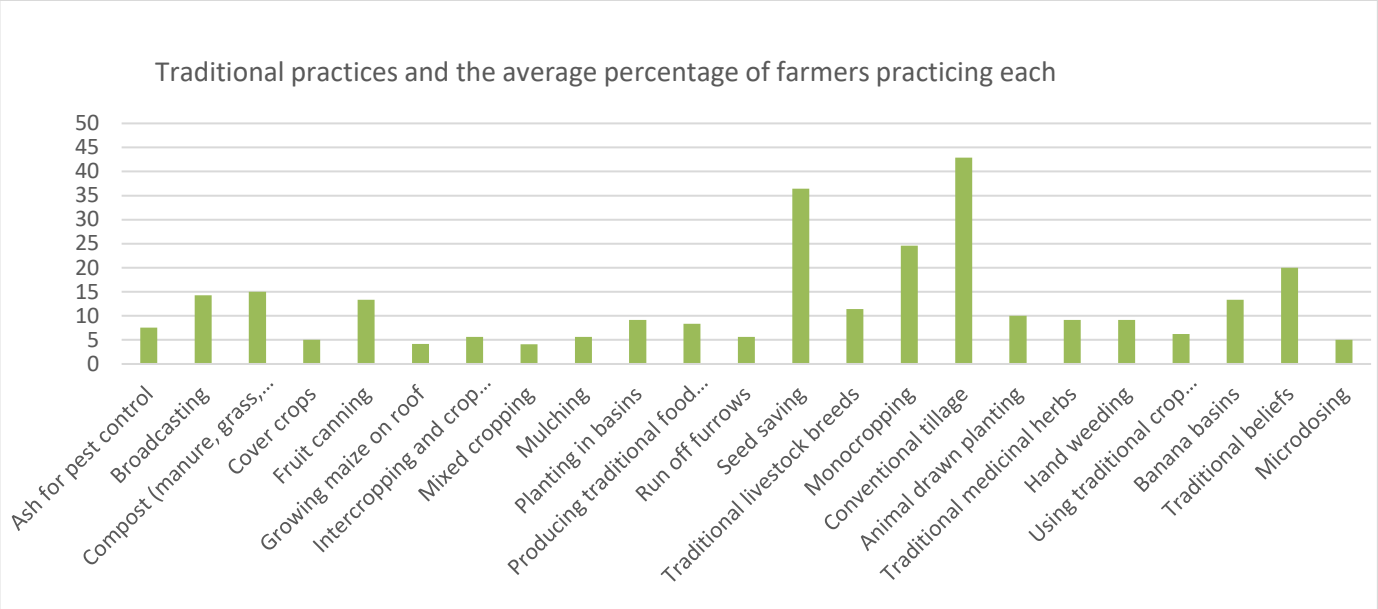


The number of improved practices that each farmer undertook in soil and water management, plant production, and livestock integration has been compiled and is presented here as a tree map for the Limpopo participants. It provides a good overview of all the different practices that were implemented by the farmers. It also provides an indication of which practices were favoured. Trench beds, for example, were adopted by 95% of the participants, while the use of foliar sprays and pruning was only adopted by 5% of the participants. This assessment was undertaken towards the end of the implementation period and thus also serves as an indication of which practices have been sustainably adopted by the smallholder farmers.


Soil
Trench beds, 95%
Microtunnels, 90%
Manure, 75%
Furrows and ridges, 60%
Eco-circles, 30%
Shallow trenches, 25%
Compost, 25%
Raised beds, 10%
Plant production
Crop rotation, 90%
Mixed cropping, 85%
Liquid manure, 45%
Inter cropping, 25%
Natural pest and disease control, 15%
Seed propagation, 10%
Conservation agriculture, 30%
Foliar spray, 5%
Planting herbs, 5%
Seedling production, 5%
Water
Rainwater harvesting, 90%
Stone bunds/lines, 75%
Mulching, 60%
Drip irrigation, 35%
Diversion ditches, 20%
Tower gardens, 15%
Underground tank, 5%
Traditional practices
Seed saving, 40%
Banana basins, 25%
Indigenous livestock breeds, 20%
Pruning, 5%

5.5 HONOURS LEGACY

Traditional farming practices preserve the knowledge and experiences of past generations while reflecting the culture and heritage of a community. An exploration of traditional practices in use by the smallholder farmers is summarised in the graph below. Several of these practices have been promoted in the learning groups as good examples of CRA practices. Banana basins, seed saving, and traditional crop varieties and animal breeds specifically were actively promoted in the programme.

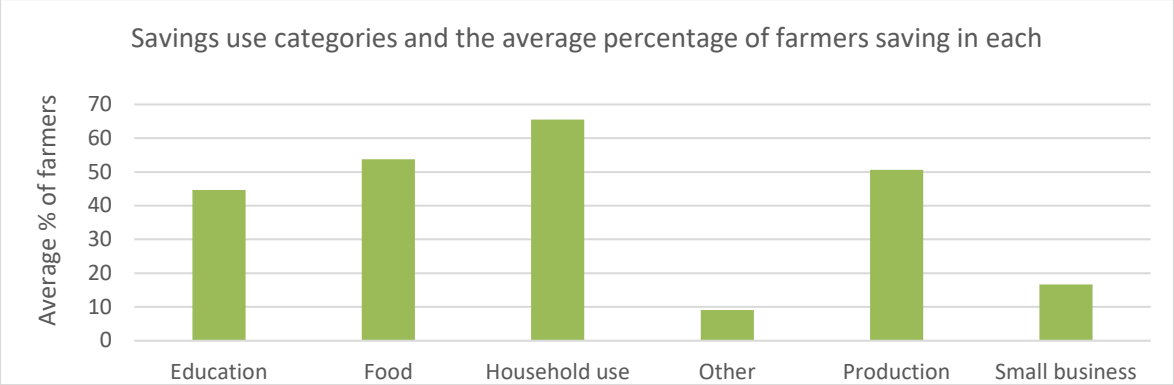


5.6 BUILDS HUMAN CAPITAL

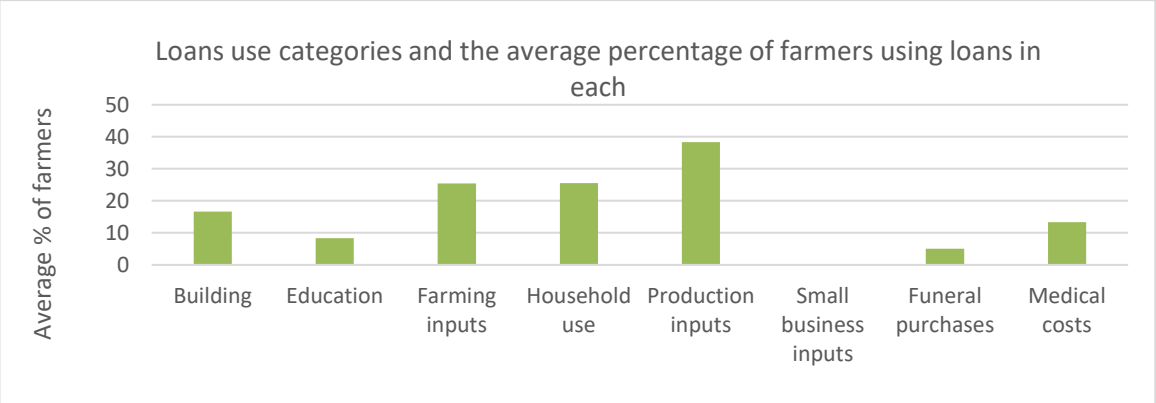
Twenty-nine VSLAs' with 535 participants supported. Eighteen of these groups were specifically supported through this programme. Average monthly saving per participant has increased from R321 to R690. Overall value of savings in these groups is >R1 million annually.

This indicator examines the assets that smallholder farmers have developed through the programme, including improved knowledge, financial resources, and productive assets. While some of these aspects are covered under other indicator sets, the primary focus here is on microfinance, particularly savings and small loans.

VSLAs play a key role in the programme, helping smallholders manage cash flow, reduce debt, and fund both daily needs and productive activities. Additionally, financial education and planning initiatives strengthen local capacity for budgeting, saving, and asset-building. There has been a substantial increase in the number of farmers saving for production, from 15% at the beginning of the programme to 60% towards the end of the programme, as shown in the diagram below.



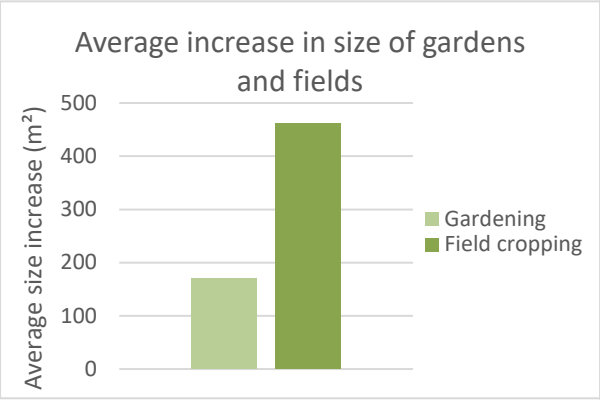
Savings are collected monthly and shared out once per annum to provide for larger sums of money. Small loans are taken monthly and paid back into the group account within 3–4 months. Participants generally take 2–3 of these small loans in each yearly cycle. The use categories for loans are slightly different from the savings-use categories and focus more on expenses such as funerals, medical costs, building and farming inputs, as shown in the diagram below.

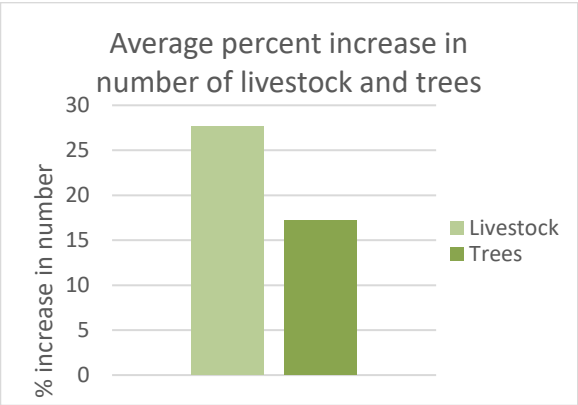


5.7 REASONABLY PROFITABLE

Monthly farming incomes have however increased by on average R511/month. Average monthly income for participants across all regions is around R2 000/month. Incomes post COVID-19 have decreased for some areas by as much as 40%.

For this indicator set, several aspects were explored. We asked questions related to farming, productivity, incomes, and savings. We explored the increase in size of fields and gardens, as well as the number of livestock and fruit trees over the period of implementation.





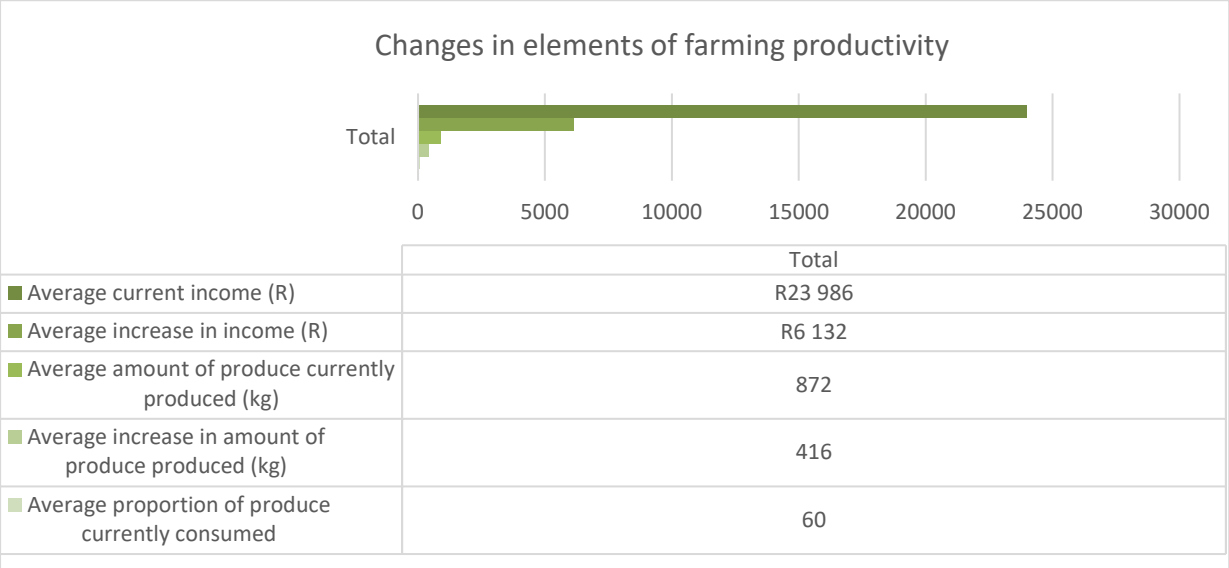
Across all areas, the average increase in garden size was around 171 m^2, the average increase in field size was 461 m^2, and the percentage increase in the number of livestock and fruit trees was 28% and 17%, respectively.

It is possible to compare these data for each of the villages involved. Implementation varies quite significantly depending primarily on available resources – land and water. As an example, five villages in Limpopo are compared.

Village (Limpopo)	Gardening (m^2)	Field cropping (m^2)	Livestock (%)	Fruit trees (%)
Worcester	44	0	33	31
Santeng	65	0	12	18
Sedawa	565	0	43	16
Willows	177	52	44	42
Turkey	458	500	10	27

The two villages where field cropping areas were increased both have access to supplementary irrigation through private boreholes. In Santeng and Worcester, access to household water is extremely restricted, as indicated here by the small increases in household garden sizes in these two villages when compared to the others. Increases in Sedawa and Turkey are the largest because of the MDF-supported household water provision processes in these villages. The trends for an increase in livestock (mostly poultry and other small livestock) and fruit trees (mostly mangoes, avocadoes, and citrus) were not directly related to water access.

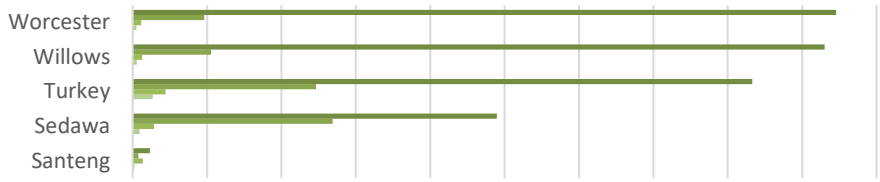
With respect to productivity, the following diagram provides a summary. These data comprise a careful and detailed combination of all crop and livestock products eaten and sold for each participant interviewed.



	Total
Average current income (R)	R23 986
Average increase in income (R)	R6 132
Average amount of produce currently produced (kg)	872
Average increase in amount of produce produced (kg)	416
Average proportion of produce currently consumed	60

On average, participants consume 60% of what they produce and have doubled their production through their participation in this programme. They have also increased their incomes by 25% through their farming activities.

If one zooms into one of the regions, Limpopo for example, the information can be gleaned and compared across villages.



	Santeng	Sedawa	Turkey	Willows	Worcester
Average current income (R)	R1 153	R24 470	R41 659	R46 515	R47 292
Average increase in income (R)	R 386	R13 443	R12 331	R5 263	R4 807
Average amount of produce currently produced (kg)	675	1431	2206	649	564
Average increase in amount of produce produced (kg)	115	474	1355	284	253
Average proportion of produce currently consumed	75	59	62	73	76

The average annual farming income varies greatly across the five villages included in this analysis. Santeng village has the lowest income average of R1 153/annum and also the lowest average increase in production of 115 kg/annum. Santeng is quite a small village, hemmed in on one side by the main road and on the other sides by further villages. Access to both water and grazing areas is severely restricted, which has hampered implementation.

Sedawa shows the greatest increase in farming income (~R13 440/annum) for the five villages compared, as well as the greatest proportion of produce sold (41%). For this village, production is primarily in the form of household production (vegetables, herbs, fruit, poultry, and eggs). The trend for the village is similar. These two villages comprise the Mametja-Sekororo PGS (participatory guarantee system), which, through their Tala Table network, has provided organic marketing options for vegetables and herbs; it is not presently utilised in the other villages. In addition, group-based local water access schemes were supported in these two villages, which have provided access to a reliable water supply at the homestead level. Turkey village in particular, has shown a very impressive increase in production because of the above-mentioned support. Sedawa, like Santeng has limited access to grazing for livestock and thus their farming incomes are primarily from cropping, while farmers in Turkey also sell livestock.

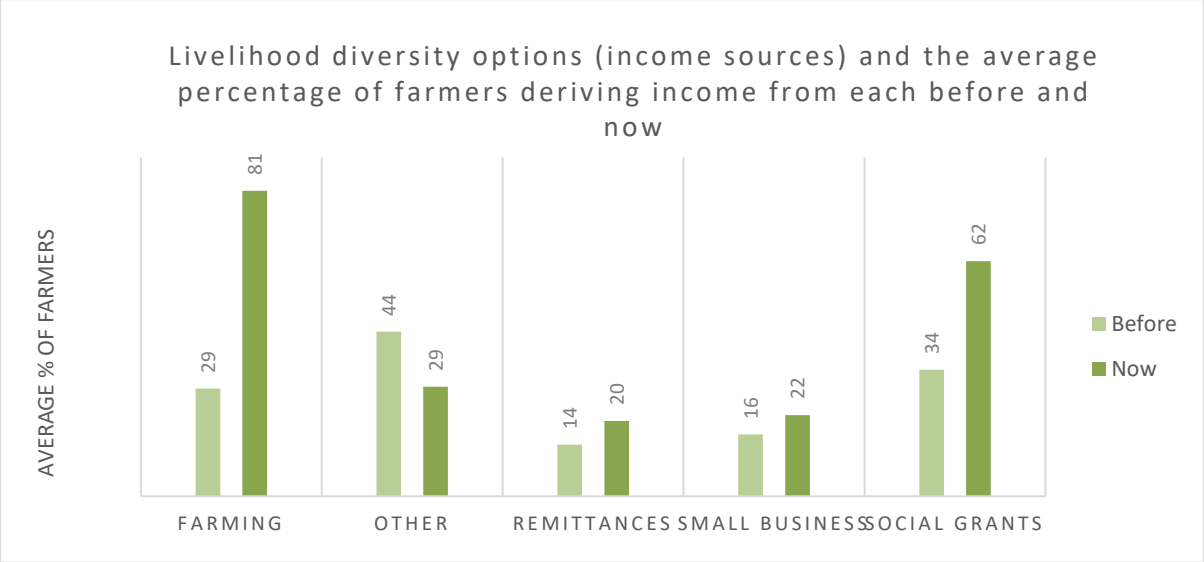
Willows and Worcester have the highest annual farming incomes – primarily from the sale of livestock as opposed to improved homestead food production, although there has been an increase of around 268 kg/annum in crop production for these two villages.

Overall, the increase in income shown is due to increased production and sales of vegetables, herbs, poultry, and eggs

5.8 DIVERSITY AND REDUNDANCY

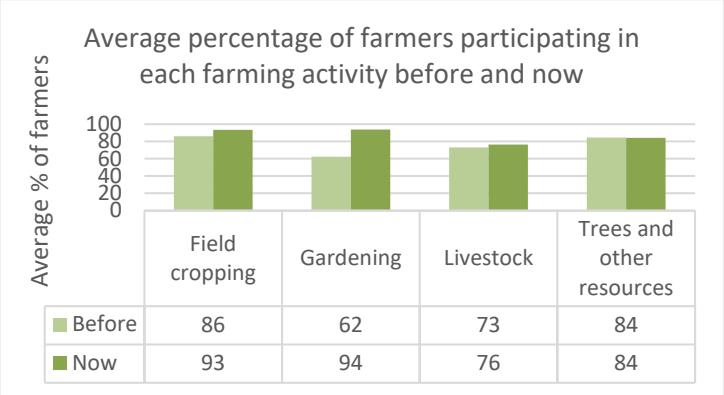
Here, diversity refers to increased diversification in the whole farming system and thus includes questions around diversification of livelihoods, of farming options, of water sources, of crop and livestock options, of nutrient sources, and of supplier and sales outlets. It is aimed at exploring how diversification can and does improve climate resilience; it also incorporates the concept of redundancy. Redundancy refers to the presence of multiple options in fulfilling one role to improve stability and resilience. This could refer to, for example, planting of multiple crop species to provide for some yield even if some of the crops fail.

With respect to livelihood options, 52% of participants incorporated farming and 8 % incorporated small businesses as livelihood options for income generation during the course of the programme, as shown in the diagram below.



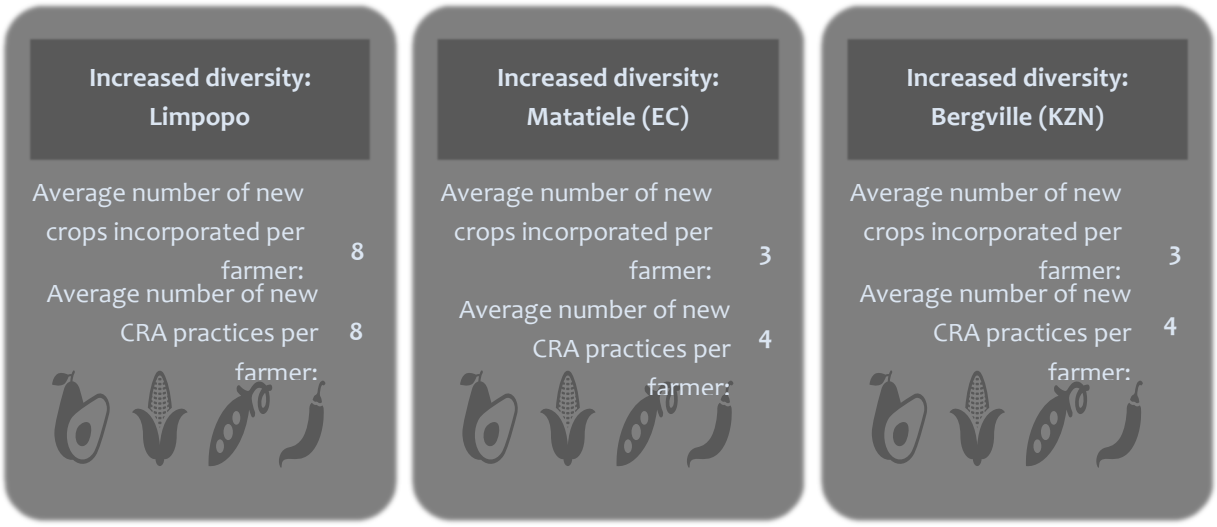
Other income-generation options have shown an increase in remittances (6%) and in social grants (28%). The latter is primarily through the COVID-19 social relief grant that was provided to struggling households (~R350/month). There was a 15% reduction in other income-generation activities – primarily short-term employment opportunities.

We also explored whether farmers diversified their production options. Here, around 32% of farmers started gardening during the course of the programme, and only around 6% and 3%, respectively, started field cropping and livestock husbandry. Most of the smallholders were already undertaking these activities and worked in improving their practices and implementation.



	Field cropping	Gardening	Livestock	Trees and other resources
Before	86	62	73	84
Now	93	94	76	84

The diagram below indicates, on average, the number of new crops farmers incorporated in each province. New, in this case, means new to the farmer and not necessarily a new crop variety. It also indicates how many new CRA practices were incorporated on average per farmer in each province.

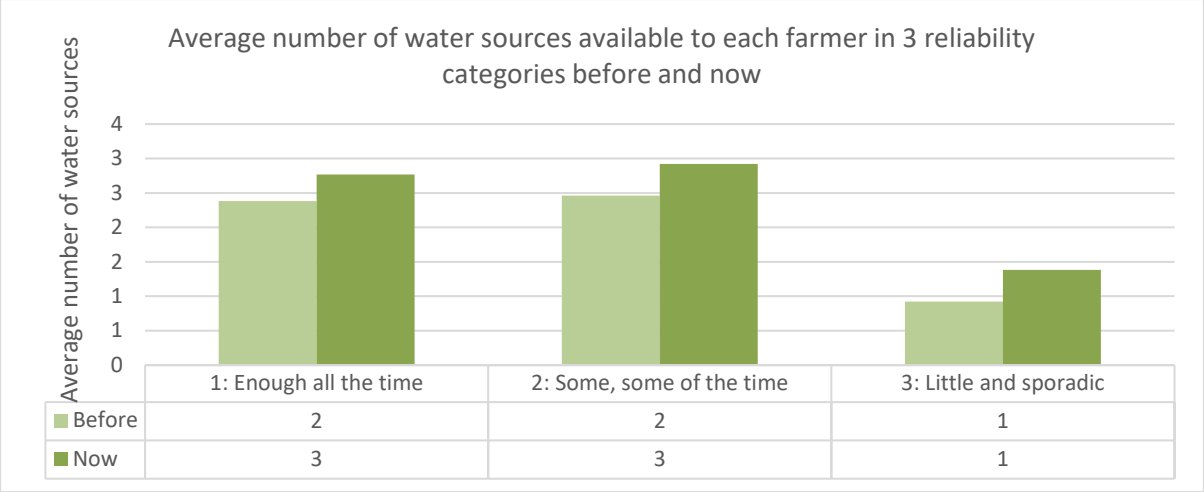


In Limpopo, farmers were a lot more receptive to trying out new crops and practices than in KZN and the EC.

Bird-resistant sorghum: A new crop incorporated by a farmer in Sofaya, Limpopo (2024)

Diversity and redundancy related to nutrient sources, input suppliers, and sales outlets showed little to no change during the course of the programme. This is a pervasive problem in the smallholder sector, where farmers have limited options in terms of where they can procure inputs. They rely on what is available in small towns and shops in their vicinity. Transport is prohibitive both for procurement and for sale.

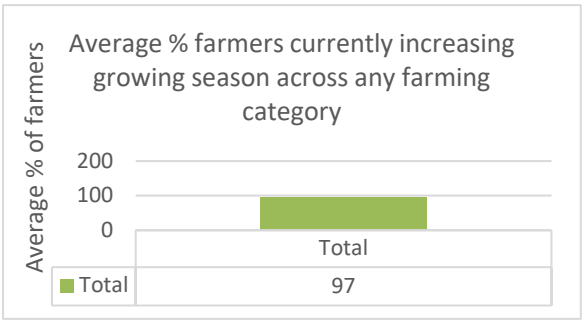
Sources of water for household use and production include boreholes, local streams and rivers, springs, and municipal taps (communal standpipes). We explored with participants whether they had managed to realise improved access and reliability in their water access during the course of the programme. An element of the intervention was to secure funding and support for local water-supply options in the villages. This was limited by severe difficulties in finding funders prepared to support such initiatives. In the few cases where support was provided, water access was improved, but not necessarily to the extent of being able to always provide enough water to all participants. This was due to low-yielding water sources, an outcome of climate change.



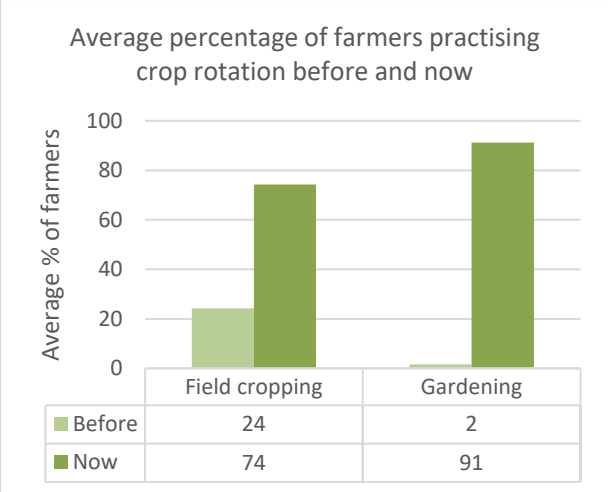
The diagram indicates only one new source of water access with enough water for all needs and one new source with a limited supply of water, and reflects the project support for two new local supply schemes.

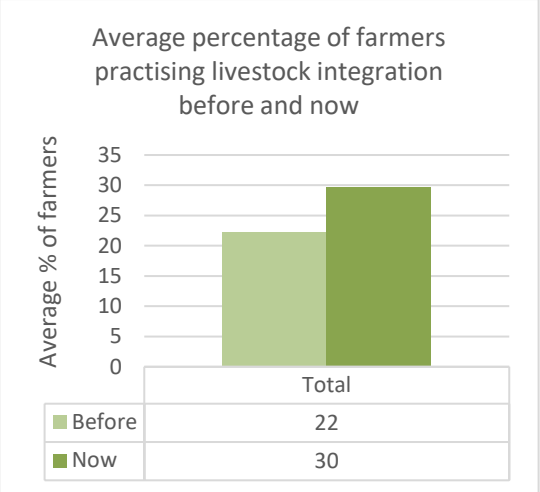
5.9 SPATIAL AND TEMPORAL HETEROGENEITY

For this indicator set, we explored aspects of increasing the periods in a year when farmers were producing and would have access to produce from their farms (temporal heterogeneity). This relates to increasing seasons for vegetable production, for example, where farmers would now plant not only in winter but throughout the year and increase field cropping seasons through the incorporation of winter crops or planting earlier in the season. As shown in the small graph alongside, 97% of participant farmers have increased their growing seasons within this programme.



We also looked at increased heterogeneity at the field level through mixed cropping and crop rotation, as well as livestock integration. The latter aspect refers to farmers who grew or collected fodder/produce to feed their livestock and/or provided supplementation to improve the nutrient value of existing fodder sources.





Crop rotation and mixed cropping have increased dramatically for both field cropping (50%) and gardening (89%), and farmers have noted increased production and decreased incidence of diseases as outcomes of undertaking these activities. Livestock integration activities have been undertaken by a small percentage (8%) of farmers only. Many participants have been reluctant to provide space in their small farms for the production of crops that they themselves could not eat.



- Planting herbs in summer (coriander, basil, fennel) - Limpopo
- Winter cover crops in autumn (black oats, fodder rye and radish) – Bergville, KZN
- Cutting and baling grass for livestock fodder in winter – Bergville, KZN

5.10 APPROPRIATELY CONNECTED

For this indicator set, we explored individual and local group relationships at village, local, and regional levels, alongside the functions of these groups, through focus group discussions and participatory impact assessments. This question required a lot larger conversation than could be provided through a few interview questions. This aspect is covered in the reports related to each region.

5.10. GLOBALLY AUTONOMOUS AND LOCALLY INDEPENDENT

The first question we asked participants was to rate how they feel about their lives now compared to before the programme, and to assess their mindset regarding how positive they feel about their future in their current location. This question came about because so many respondents felt quite bleak about their future in the initial baseline assessments undertaken at the start of the programme and also because of the high levels of migration from rural to urban areas in these regions.

Ratings:
-1: Less positive about the future
0: The same
1: More positive about the future
2: Much more positive about the future

	Matatiele (EC)	**Bergville (KZN)**	**Mametja-Sekororo (Limpopo)**
Average mindset before	1	0	1
Average mindset now	2	2	2

In general, participants in the programme felt much more positive about their future. Some comments from farmers include:

- “I have been able to achieve a lot.”
- “Never had a garden before, but now I always harvest from my garden, and I can plant throughout the year.”
- “I can provide for my family, and we never sleep with hunger, so I do have a positive mind to keep going even when things are hard.”
- “Being part of the learning group has helped me a lot in terms of growing food and securing food for my family.”
- “I manage to make an income through farming, which I was not doing before.”
- “I know how to make informed decisions about my savings and use it for valuable things other than food.”
- “I have learnt a lot. I don’t waste money on a whim in farming or planting; instead, I use what I have to produce, which does not cost a lot, and I have a better quality of food compared to 10 years ago.”
- “Since soil health is improving from the CRA harvest is now increasing.”
- “I can make an income and use available markets now.”
- “I can stand on my own and do farming for more income, and if I could have a chance to get more knowledge, I can go far.”

- “I have grown in business; not only am I selling broilers, but I also now sell eggs and vegetables as well.”
- “I am motivated to be self-sustainable and achieve more through expansion in business enterprises.”
- “New skills, ideas, and new ways of doing things innovatively within the times are important to counter changing weather conditions, markets, etc.”
- “Times have changed, because of this, we have to change our practices to adapt to the new situation and survive.”
- “Learning and discovering new ways of farming has really changed my mindset.”

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ATTACHMENTS

ATTACHMENT 1: RESILIENCE SNAPSHOT INDIVIDUAL INTERVIEW FORM

RESILIENCE SNAPSHOT						
Date						
Province, area						
Village						
Name and surname			Gender		Age	
No. of years in CRA						

Increased diversity in farming		**Yes/No Before**	**Y/N now**	**Size/no. before**	**Size/no. now**	**Comment: why or why not?**
	Gardening					
	Field cropping					
	Livestock					
	Trees and other resources					

Increased growing season		**Yes/no Before**	**Yes/no Now**	**Comment**
	Gardening			
	Field cropping			
	Livestock			
	Trees and other resources			

Increased CRA practice diversity	**No. of practices Before**	**No. of practices Now**	**Name new practices (Use water, soil, crops, livestock and natural resources)**
Traditional practices	**List of practices**	**Comments**	**Examples are seed saving, traditional livestock breeds, banana basins, aloes and ash for pest control ….**

Increased productivity	**List crops and livestock types**	**Amount before (in kg/tons), 10, 20, 50 kg bags/containers,**	**Proportion consumed vs. sold (e.g.) 70% (thus 70% eaten)**	**Amount now (in kg/t) 10, 20, 50 kg bags/containers**	**Proportion consumed vs. sold (e.g.) 70% (thus 70% eaten)**
	Gardening				
	Field cropping				
	Livestock				

	Trees and other resources				
Increased food security	**No. of food types, no. of times/week Before**	**No. of food types, no. of times/week Now**	**Comment: Where has increase or decrease come from?**		
Increased crop diversity		**No. of crops planted before**	**No. of new crops now**	**Comment: give names of crops**	
	Gardening				
	Field cropping				
	Trees and other resources				
Mixed cropping/ Crop rotation		**Yes/No Before**	**Yes/No Now**	**Comment: give example**	
	Gardening				
	Field cropping				
	Trees and other resources				
Livestock Integration practices		**Yes/No Before**	**Yes No Now**	**Description: e.g. rotational grazing, herding, fencing, water sources e.g. erosion control, clearing of aliens, re-planting**	
	Grazing management				
	Restoration				
	Firebreaks				
	fodder production				
	Cutting and baling of veld grass				
	Winter supplementation				
	Cutting and feeding or storage of fodder crops				
List of water sources available to farmer	**Sources of water (incl. RWH)**	**Before/now**	**Reliability of each (Score: enough all the time [1], some, some of the time [2], little and sporadic [3])**	**Comment**	

Water-use efficiency	Implemented practices to increase water holding capacity	Implemented practice to reduce water run-off	Comment

Improved soil health	List of options	Yes/no	Comment
	Softer (improved structure)		
	Darker (improved organic matter)		
	Fewer soil pests and diseases		
	Better able to deal with heat and drought		

Redundancy in nutrients, inputs and suppliers	List of nutrient sources available to farmer.	List of suppliers (gardens, fields, livestock)	List of sales outlets (gardens, fields, livestock)	Comments

Increased livelihood diversity/ options	Income options Before	Income options Now	Comments	**Scale:** 1=social grants; 2= remittances; 3=farming income; 4= small business; 5=other (describe)

Increased income	Income before (average monthly from farming)	Income now (average monthly from farming)	Comments

Savings (safety, security, achievement)	Amount per month Before	Amount per month Now	Use of savings: 1=food 2=household use 3=education 4=production 5=small business 6=other	Change in agricultural productive assets (categorise in equipment, livestock, etc.)

Village Loans and Savings Associations (VSLAs)	Are you part of a VLSA group? Y/N	Name of the VSLA group	No. of years participated	Average amount loaned	Use of loan

Collaborative actions/social agency	Activities in groups Before – name	Activities in groups Now	How is the group/social agencies helpful? What does the group do? (incl. emergency support)	E.g., savings, stokvels, local insurance, church, learning groups, coops, farmers associations, work teams, selling, inputs, farmers centres, water committees, livestock groups, etc.
1				
2				
3				
4				
5				

Informed decision-making	Information used to choose activities Before	Information used to choose activities Now
	e.g. Other community members, learning in groups, written info, radio, facilitators, extension officers, etc.	
1		
2		
3		
4		

Knowledge sharing	How did they share knowledge before?	How do they share knowledge now?	What type of knowledge is shared? Categorise e.g. Livestock, farming, water, business
1			
2			
3			
4			

Positive mindsets	Rate your mindset before	Rate your mindset now	Comment (look into personal attitudes, motivations, and beliefs)
	SCALE: -1=less positive about the future; 0=the same; 1=more positive about the future; 2=much more positive		

ATTACHMENT 2: PARTICIPATORY IMPACT ASSESSMENT FOCUS GROUP DISCUSSION OUTLINE

PIA workshop outline

1. Recap climate change impacts
   - Explore what people have noticed about impacts and make lists under headings: natural, physical, economic, human, and social

Group-level brainstorming of ideas; written on cards under the headings given, with arrows for increase or decrease.

2. Recap adaptive strategies/practices
   - What have people been doing to adapt to this, fix the problems, make things better?

*Group-level brainstorming: Elucidate adaptations for each category: natural, physical, economic, human, and social. Write on different cards (those done and those thought of) and place next to the impact. Indicate with a * which of these have been facilitated or introduced (and by whom) – this can be other farmers, projects, extension officers, etc.*

3. Practices: Recap five fingers and list all practices under each category

   - Re-introduce the five fingers concept – and include a further category of the whole hand, which is the social and personal/human
   - Which practices have been implemented (introduced and others)?

Go around the circle, and each person mentions what they have done (productive, economic, social, personal actions) and what they would still like to try

   - Add these practices to the five-finger diagram

Make an A1 diagram of the five fingers and then add practices on cards

4. What have been the changes or benefits from each practice
   - What changes have there been?

Brainstorming changes – and interrogate to get more

   - How important are these changes to your lives? How do you decide? Which criteria would you use to decide?

Do a matrix ranking: changes (in columns), criteria (in rows) – use proportional piling, working down each column by asking "how important is this practice for the criteria?" and comparing the practices with each other (to an extent) as you go down the list.

   - **Questions To Include**

A more in-depth exploration. Dialogue around human and social dimensions of CC impact and changes made. Impact of CC on social organisation, human capital, pests, and diseases incidence and severity. Conflict resolution – how this is done, changes, impact of CC?
Absorptive and capacity:

- Learning networks/groups: *networks or groups that farmers belong to that allow learning around CRA and adaptation.*
- Flexibility of networks: (many weak connections) allows configurations to change according to members' needs and desires. Network mapping for the number and strength of connections (internal and external) -*Venn diagram.*

- Functions of support networks: dialogue to discuss types of support, and in relation to gender and equity issues. *What groups do and help with (list). Physical, social, emotional, economic, emergency (and any categories that came out of the list).*
- Increased knowledge sharing – learning for productivity and ability to continue: What is shared? – Categories/types of knowledge sharing. *What farmers have learnt and how that will change how they do things in the future.*
- Increased knowledge and agency: *what farmers can do now that they weren't able to do before – list.*

Transformative capacity:

- Inclusivity of networks: The extent to which networks include women, youth, and other vulnerable groups. *Percentage of group members disaggregated into the categories.*
- Extent to which networks cross scales or hierarchies: No. of "active" connections between farmer learning groups and macro-level stakeholders (meaning that there has been interaction or exchange of information, etc., within the past year). *List of connections and average no. of active cross-scale connection meetings/events with people outside the community – other villages, stakeholders.*
- Changes in personal attitudes, motivations, and beliefs: *farmers' perceptions of how they think they have grown and changed, and the number of farmers noting changes.*

ATTACHMENT 3: IN-DEPTH LIVELIHOODS CASE STUDY SURVEY FORM

Participants: Small farming businesses (including farming-related businesses) whose operators participate in the farmer learning groups and Village Savings and Loans Association (VSLA) programme

QUESTIONNAIRE

Date of the interview _____ Gender of respondent _____

Name of respondent _____

Name of community _____

Name of region Southern KZN |KZN Midlands |Bergville |Matatiel |Limpopo

UNDERSTANDING A BUSINESS ENTERPRISE AND FOCUS

1. In your own words and experience, how do you define a business enterprise?

_____

_____

_____

1.1. What is the focus of your farming/agricultural business? List commodities that you produce and sell, starting with the most profitable commodities.

Commodity	**When do you sell your produce during the year?**	**Who are your main buyers?**	**How much money do you put in?**	**How much income do you make?**
Vegetables				
Crop 1:				
Crop 2:				
Crop 3:				
Crop 4:				
Crop 5:				
Grains				
Green/fresh mielies				
Dry maize				
Beans				
Other				
Livestock				
Broilers				
Eggs layers to sell eggs				
Indigenous chickens				
Boschvelders				

Commodity	When do you sell your produce during the year?	Who are your main buyers?	How much money do you put in?	How much income do you make?
Goats				
Pigs				
Calves				
Cows/bulls				
Other				
Trading (specify)				
Product 1:				
Product 2:				
Product 3:				
Processing				
Makes maize products				
Makes livestock feeds				
Makes sorghum				
Other				

Respond to the following questions by drawing on the responses from the table above.

Question	Vegetables	Grains	Livestock	Trading	Processing
On average, how many production cycles do you have per year?					
How much do you make per production cycle (yields)?					
How much is the profit from this production cycle income?					

THEN CALCULATE ANNUAL INCOME AND PROFIT					
	Vegetables	**Grains**	**Livestock**	**Trading**	**Processing**
Average income per year					
Average profit per year					

1.2. How do you know that each time you finance your business, you make a profit? ___

_____

_____

_____

1.3. What prompted or encouraged you to operate this business? Demand and supply. _

_____

_____

1.4. How exactly do you sell your produce? Choose/tick the most appropriate in the table below.

Home		Farm gate		School		Clinic	
Taxi rank in the community				Market stall in the community			

Market supported by MDF		Local shops and tuck shops	
Bakkie traders		Vendors in town	
Mainstream shops like Spar, Boxer		Pension pay points	
Other, describe			

1.5. What do you do in order to make sure you have enough produce to sell? In other words, meeting the demand of your customers.

_____

_____

_____

_____

1.6. What external factors help you meet the demand from your customers?

_____

_____

_____

1.7. What external factors make it hard for you to meet the demand for your customers?

_____

_____

_____

_____

ACCESS TO FORMAL/MAINSTREAM MARKETS

2. Do you sell your produce to formal markets? For example, retail/chain stores like Spar, Pick'n Pay, Boxer, etc. [**Yes/No**] If yes, respond to questions 2.1 to 2.4, and if no, jump to questions 2.5 to 2.9.

2.1. Who are those buyers/shops? _____

_____

2.2. What do they buy? _____

2.3. How often to you supply them? _____

2.4. What has been your experience in dealing with these shops? _____

_____

_____

2.5. Have you approached them/tried to sell to them? _____

2.6. What do you need to know and do in order to sell to these shops? _____

_____

_____

2.7. What has been your experience the last time you approached these shops? _____

_____

_____

_____

2.8. What you think you still need to know and do in order to sell your produce to these shops?

_____

_____

2.9. Do you think you really need to sell your produce to these shops? [**Yes/No**] If yes, why?

_____

_____

SUPPLEMENTAL INCOME-GENERATING ACTIVITIES/SOURCES

3. In the event you are unable to sell your main produce/products, that is, when the demand is low, or when you are still growing your crops, what else do you do/sell to generate income for your household? Give details of your top three income-generating activities (IGAs) that you use to supplement your household income.

Type of IGA	**IGA 1**	**IGA 2**	**IGA 3**
Who are your main customers?			
Exact time of the year the IGA is operated			
Level of effort needed to operate the IGA			
Level of demand			
Average capital outlay			
Average income			
Average profit			

NOTES _____

_____

_____

FINANCING YOUR BUSINESSES

Use the table in the next page to respond to the following questions.

4. Have you used money from your savings group(s), loans of share-out to finance your business and/or IGAs; how much, and did you make a profit?

When?	**Loan: How much?**	**Share-out: How much?**	**What was it used for?**	**Did you make a profit?**
Last month				
3 months back				
6 months back				
A year back				
Last 2 years				

When?	Loan: How much?	Share-out: How much?	What was it used for?	Did you make a profit?
TOTAL				

NOTES _____

_____

_____

FINANCING YOUR BUSINESS AND IGAs USING SAVINGS GROUPS

5. Use of short-term loans from your savings group(s).

5.1. How many times did you take out business loans from your savings group to finance your business last year? _____

5.2. How much were these loans in total? _____

5.3. How much profit did you make from this loan/these loans? _____

6. Use of share-out money from your savings group(s).

6.1. How much did you receive as share-out last year? _____

6.2. How much of this share-out was used to finance your business? _____

6.3. How much profit did you make from this part of the share-out that you used in your business? _____

7. **Total business finance:** Looking back from last year until now, how much have you spent on your business activities? _____

KEEPING BUSINESS RECORDS

8. Keeping business records.

8.1. What business records do you keep? Choose the most appropriate below.

- Cash/till slips ☐
- Invoices ☐
- Quotations ☐
- Your logbook ☐
- Your airtime and data purchases ☐
- Your travel expenses/taxi fares ☐
- Labour register and logbook ☐
- Production asset register ☐
- Register/journal of expenses, i.e., items consumed by the household ☐
- Sales journal/cashbook ☐
- Journal of expenses ☐
- Month-to-month budget ☐
- Month-to-month cash flow ☐

8.2. Why is it important to keep these business records? _____

_____

_____

_____

8.3. Why do you struggle to keep business records? _____

_____

_____

8.4. What can you do to make record-keeping easy for you? _____
_____
_____

WORKING TOGETHER

9. How have you worked together with your fellow producers with regard to the following activities?

Areas of working together	**Yes**	**No**
Planning together		
Learning and sharing knowledge concerning:		
• production		
• business management		
• access to markets		
• product/produce diversification		
• operating supplementary IGAs		
• Other (explain)		
Buying inputs together and sharing transport costs and related logistics		
Operating a savings group specifically for production purposes/goals		

10. What are your key business lessons from your experience? _____
_____
_____
_____

CHARACTERISTICS OF A SUCCESSFUL BUSINESS ENTERPRISE

11. Now that you have operated your business, what are some characteristics of a successful business enterprise? *Refer to the responses given in question 1 above*. _____
_____
_____
_____
_____

FURTHER SUPPORT NEEDED

12. Having operated your business this far, what further support, e.g., business training and/or business mentoring, do you think you need to grow your business and your IGAs?
_____
_____
13. Do you have questions for me/MDF? _____
_____
_____

Thank you very much for your time and participation.

ATTACHMENT 4: BASELINE SURVEY

Date		Baseline form no.			
Surname		First name			
Village		GPS			
Tribal authority		Induna			
Cell no					
Gender	♀	♂	Household head (Y/N)		
Highest level of education					
Disabilities: physical, mental, injuries, chronic diseases, HIV/AIDs, bedridden, etc.					
Members of social organisation/s (describe) e.g. savings group, learning group, etc.)					
Names and gender of adults in household • Women • Men	NAME AND SURNAME GENDER 1 2 3 4 5 6		No. of children in household • Girls • Boys		
Household income – no. of people	Formal employment	Contract work	Self-employment	Social grants	Other
Type of grant(s) – add in no./HH	Child Support ☐		Old Age ☐		Foster care ☐
Income levels in the household: 1. R0–R999 2. R1 000–R1 999 3. R2 000–R2 999 4. R3 000–R3 999 5. R4 000–R4 999 6. R5 000–R5 999 7. >R6 000					
Is there support from family away from home for weeks/months?	Where do they work/live?	What is their occupation?	What and how much support do they provide?	How often is support provided?	
Resources and infrastructure	Water - tap - standpipe - tank - RWH	HH infrastructure - electricity	Farming infrastructure and tools	Other	

		- fencing - toilet		
Scale of operation	0,1–1 ha	1–2 ha	>2 ha	
Farming activities	Garden (size)	Fields (size)	Livestock (No.) Cattle: Goats: Chickens: Other:	Natural resources – specify Trees: Indigenous plants:

Household expenditure	**Expenditure items**	**Monetary spend each month**
	Food	
	Water	
	Energy (electricity, battery, solar)	
	Transport	
	Clothes	
	School	
	Farming (garden, livestock, etc.)	
	Other, specify e.g. funeral, stokvel,	
Sources of food	**Where do you get food from?**	**What food do you get from this place?**
	Shop	
	Own garden	
	Wilderness	
	Hunting	
	Fishing/marine harvest	
	Gifts from neighbours	
	Feeding schemes (school, community, government)	

Are some months in the year more difficult to get food? If yes, which months are those?	Yes	No	

Do you think your activities have an impact on the environment? If so, what?	
Are you aware of climate change and what it means for you?	
What have you seen as a result of climate change?	