Deliverable

7

Water Research Commission

Project Number: **C2022/2023-00746**

Project Title: **Dissemination and scaling of a decision support framework for CCA for smallholder farmers in South Africa**

Deliverable No.7: **Case studies: Community based Climate Change Adaptation implementation case studies in 3 different agroecological zones in South Africa.**

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Submitted to:
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1. INTRODUCTION

This section provides a brief summary of the project vision, outcomes and operational details.

AIMS	
No	**Aim**
1.	Create and strengthen integrated institutional frameworks and mechanisms for scaling up proven multi-benefit approaches that promote collective action and coherent policies.
2.	Scaling up integrated approaches and practices in CbCCA.
3.	Monitoring and assessment of environmental benefits and agro-ecosystem resilience.
4.	Improvement of water resource management and governance, including community ownership and bottom-up approaches.

OUTCOME

Vertical and horizontal integration of this community- based climate change adaptation (CbCCA) model and process leads to improved water and environmental resources management, improved rural livelihoods and improved climate resilience for smallholder farmers in communal tenure areas of South Africa.

EXPECTED IMPACTS

1. Scaling out and scaling up of the CRA frameworks and implementation strategies lead to greater resilience and food security for smallholder farmers in their locality.
2. Incorporation of the smallholder decision support framework and CRA implementation into a range of programmatic and institutional processes
3. Improved awareness and implementation of appropriate agricultural and water management practices and CbCCA in a range of bioclimatic and institutional settings
4. Contribution of a robust CC resilience impact measurement tool for local, regional and national monitoring processes.
5. Concrete examples and models for ownership and management of local group-based water access and infrastructure.

5. Chronology of activities

1. Desktop review of CbCCA policy and implementation presently undertaken in South Africa
2. Set up CoPs:
    a. Village based learning groups: A minimum of 1-3 LGs per province will be brought on board.
    b. Innovation platforms: 3 LG clusters, one for each province consisting of a minimum of 9- 36 LGs will be identified to engage coherently in this research and dissemination process.
    c. Multistakeholder platforms: Engage existing multistakeholder platforms such as the uMzimvubu catchment partnership, SANBI- Living Catchments Programme, the Adaptation Network, etc.

3. Develop roles and implementation parameters for each CoP

    a. Village based learning groups: CCA learning and review cycles, farmer level experimentation, CRA practices refinement, local food systems development, water and resource conservation access and management and participation and sharing in and across villages.

    b. Innovation Platforms (IP): Clusters of LGs learn and share together with local and regional stakeholders for knowledge mediation and co-creation and engagement of Government Departments and officials (1-2 sessions annually for each IP)

    c. Multistakeholder platforms: Development of CbCCA frameworks, implementation processes (including for example linkages to IDPS and disaster risk reduction planning and implementation at DM and LM level), reporting frameworks for the NDC to the CCA strategy, consideration of models for measurement of resilience and impact (1- 2 sessions annually for each multi stakeholder platform)

4. Cyclical implementation for all three CoP levels (information provision and sharing, analysis, action, and review) within the following thematic focus areas: Climate resilient agriculture practices, smallholder microfinance options, local food systems and marketing and community owned water and resources access and conservation management plans and processes. Each of these thematic areas is to be led by one of the senior researchers and a small sub-team.

5. Monitoring and evaluation: Consisting of the following broad actions:

    a. Focus on 3-4 main quantitative indicators e.g. water productivity, production yields, soil organic carbon and soil health.

    b. Indicator development for resilience and impact and

    c. Exploration of further useful models to develop an overarching framework.

6. Production of synthesis reports, handbooks and process manuals emanating from steps 1-4 with the primary aim of dissemination of information.

7. And refinement of the CbCCA decision support platform, incorporating updated data sets and further information form this research and dissemination process.

DELIVERABLES				
No.	**Deliverable Title**	**Description**	**Target Date**	**Amount**
1	Desk top review for CbCCA in South Africa	Desk top review of South African policy, implementation frameworks and stakeholder platforms for CCA.	01/Aug/2022	R100 000,00
2	Report: Monitoring framework, ratified by multiple stakeholders	Exploration of appropriate monitoring tools to suite the contextual needs for evidence-based planning and implementation.	02/Dec/2022	R100 000,00
3	Handbook on scenarios and options for successful smallholder financial services within the South Africa	Summarize VSLA interventions in SA, Govt and Non-Govt and design best bet implementation process for smallholder microfinance options.	28/Feb/2022	R100 000,00

4	Development of CoPs and multi stakeholder platforms	Design development parameters, roles and implementation frameworks for CoPs at all levels, CRA learning groups, Innovation and multi stakeholder platforms; within the CbCCA framework.	04/Aug/2023	R133 000,00
5	Report: Local food systems and marketing strategies contextualized - Guidelines for implementation	Guidelines and case studies for building resilience in local food systems and local marketing strategies towards sustainable local food systems (local value chain)	08/Dec/2023	R133 000,00
6	Case studies: encouraging community ownership of water and natural resources access and management	Case studies (x3) towards providing an evidence base for encouraging community ownership of natural resource management through bottom-up approaches and institutional recognition of these processes.	28/Feb/2024	R134 000,00
7	Case studies: CbCCA implementation case studies in 3 different agroecological zones in SA	CbCCA implementation case studies in 3 different agroecological zones within South Africa	12/Aug/2024	R133 000,00
8	Refined CbCCA decision support framework with updated databases and CRA practices	Refined CbCCA DSS database and methodology with inclusion of further viable and appropriate CRA practices	13/Dec/2024	R133 000,00
9	Manual for implementation of successful multistakeholder platforms in CbCCA	Methodology and process manual for successful multi stakeholder platform development in CbCCA	28/Feb/2025	R134 000,00
10	Final Report	Final report: Summary of all findings, guidelines and case studies, learning and recommendations	18/Aug/2025 (Feb 2026)	R400 000,00

Deliverable 7 focusses on an analysis of the impact of the full suite of agricultural, economic and water and resource management activities for the village-based learning groups in three different agroecological zones through case studies. An intensive monitoring and evaluation framework has been developed for measuring climate resilience impact. The methodology including individual interviews and focus group discussions has been piloted and refined through implementation in 10 villages across Limpopo, KZN and the Eastern Cape.

2. PROCESS PLANNING AND PROGRESS TO DATE

The intention is threefold, as describe below and shown in the diagram:

- Expand introduction and implementation of the CbCCA DSS framework within the areas of operation of MDF with a number of different communities. Work with existing communities as the basis of the case studies in specific thematic areas.
- Introduce and implement the CbCCA DSS framework with a range of other role-players expanding into new areas, including different agroecological zones and
- Work at multistakeholder level to introduce the methodology as an option for adaptation planning and action, both within civil society and also including Government stakeholders.

This is the first step towards institutionalization of the process and will involve mainly working within existing multistakeholder platforms and networks as the starting point.

- Further exploration of the categories of stakeholders and the roles and relationships between stakeholders is important for the present research brief.

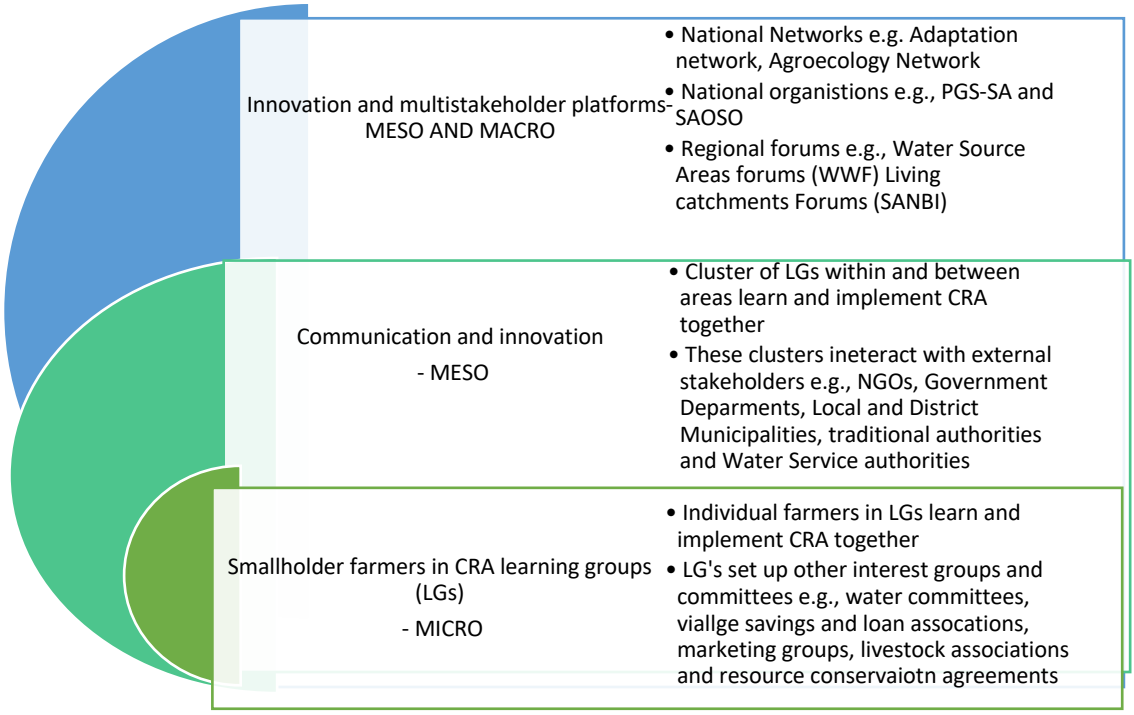


Figure 1: Conceptualization of stakeholder platforms at multiple levels to support CbCCA

Smallholder farmers in climate resilient agriculture learning groups

This process has been initiated by continuing and strengthening specific CRA learning groups, which have been supported by MDF in the past and who have done well in implementation and building of social agency. These groups will provide the focus for further exploration of food systems, water stewardship and governance and engagement with local and district municipalities.

CRA learning group summary:

Province	Area	Villages	No of participants
KZN	Bergville	Ezibomvini, Stulwane, Vimbukahlo, Eqeleni, Emadakaneni	130
	Midlands	Ozwathini, Gobizembe, Mayizekanye, Ndlaveleni	110
	SKZN	Mahhehle,Mariathal, Centocow, , Ngongonini	90
Limpopo	Sekororo-Lestitele	Sedawa, Turkey,Willows, Santeng, Worcester, Madeira	110
EC	Matatiele	Ned, Nchodu, Nkau, Rashule,	75
	5	23	515

Table 1: Micro-level CoP engagement: February 2023 to August 2024

Note: Collaborative strategies in bold undertaken during this reporting period

Description	Date	Activity
Establishing learning groups at village level	2022/11/25, 12/09 2022/11/15, 11/29, 2023/02/07	Limpopo: Sophaya SKZN: Mahhehle -CCA workshop x 2 days,

	2023/02/09 2023/01/18 2023/03/27 2023/06/15, 07/07	Bergville: Eqeleni EC: Ned, Nkau Limpopo: Madeira KZN Midlands: Ndlaveleni, Montobello, Noodsberg, Inkuleleko primary school
Training and mentoring for climate resilient agriculture	2022/12/02 2022/10/26 2022/10/08-14 2022/11/23,24,29 2022/02/10 2022/02/27, 03/28 2022/03/08, 03/17, 03/28 2022/03/15 2023/03/07,08 2023/03/29,30 2023/03/24,27,30 2023/04/, 2023/05, 2023/06 2023/04/21,25, 05/26, 06/08 2023/04/19,20 2023/06/22 2023/08/07,08,10 2023/09/19 2023/10/16-19 2023/11/13-17 **2023/12/04** **2023/12/14** **2024/02/23** **2024/03/22** **2024/05/28**	Midlands: Ozwathini contouring workshop SKZN: Mahhehle – tower gardens EC-Matatiele: Drip irrigation workshops in 5 villages SKZN: CA demonstration workshops in 3 villages SKZN: Plainhill Drip irrigation training Limpopo: Sofaya trench beds SKZN: Mahhehle tower gardens, poultry production, trench beds SKZN: Mariathal gardens and experimentation Bgvl: Madakaneni, Mahlathini – gardening training EC: Ned, Nchodu poultry production EC: Nec, Nchodu, Mzongwana- Pest and disease control Limpopo and KZN: trench bed training with assembling of tunnels for 45 households across 8 villages, including distribution of seedlings, mixed cropping and mulching learning inputs and drip irrigation Limpopo: Willows, Sedawa, Mametja Sophaya. Bergville-Matwetha, Emadakaneni – Natural Pest and Disease control Bergville, SKZN: Poultry production: eMadakaeneni, Mjwetha, Mariathal, Mahhehle, Centocow EC: Ned, Nkau, Rashule, Nchodu- Soil and water conservation Matatiele: Multipurpose chicken production and cage construction (Ned(13), Rashule(22), Nchodu(23) Matatiele: Nchodu -Value Adding training (32) Limpopo: Boschvelder feeding and management training x 5 villages (50 participants) Limpopo (30): CA demonstrations and farmer level experimentation: intercropping cover crops **-Midlands: Gobizembe Youth group- seedling production training** **-Limpopo: Sofaya(10) , Madeira and Willows (16) CA training and demos** **-Limpopo: advanced nutrition workshop x 5 villages** **-SKZN: gardening refresher workshops (Centocow, Mahhehle, Mariathal, Ngongonini)** **-Matatiele (EC) nutrition workshops x 4 villages**
Cyclical implementation through mentoring for capacity development for LG at local level	2022/08/16,17,18,19,30 2022/10/16 2022/11/21-24 2023/01/24-30 **ONGOING** 2023/10/03-06 2023/11/05-12/15 2023/11/30-2024/02/28 **2024/ 03/ 30** **2024/07/08**	CCA review and planning workshops -Bergville: CA review and planning (5) -Midlands: CA review and planning (3) -Limpopo: CCA review and planning (4) **CCA prioritization of practices** -Matatiele: 5 villages (Ned, Nchodu, Rahsule, Nkau, Mzongwana -**All areas: garden monitoring, poultry support, tunnel and drip kit installations, VSLAs monthly meetings, CA production and monitoring** KZN-Bergville Boschvelder chicken delivery and maintenance mentoring for 45 participants KZN: Bergville_CA farmer experimentation planting for 124 participants, incl cover crops awa collaboration with Forge Agri to Fodder Beet trials and Zylem SA for new Maize variety trials Midlands: Seedling nursery project initiation for youth group in Gobizembe (11 members) **-KZN,EC and Limpopo – 2nd round micro tunnel introduction and deliveries (x30 tunnels)** **-KZN ,EC and Limpopo- 2nd round of multipurpose chicken delivery, training and mentoring, including introduction of incubators for local breeding**
Income diversification and economic empowerment of local farmers (LG at local level)	**Ongoing - Monthly** Jan-December 2023 July-Sept 2023	***Market days: monthly farmers markets*** -**Midlands: Bamshela (Ozwathini**) -SKZN: Creighton (Centocow) -Ubuhlebezwe LED Ixopo flea market **- Bergville: Bergville town** ***Market exploration workshops*** -Midlands: Mayizekanye, Gobizembe -EC_Ned-Nchodu market day in Matatiele -SKZN: Mariathal PGS follow-up w/s Limpopo SKZN: Mahhehle

	Ongoing- Monthly **April-June 2024** **May-July 2024**	**VSLA meetings and share outs** -Bergville (18) -SKZN: Ngongonini (2), Centocow (4) -Midlands: Ozwathini (6) Limpopo: (7) **-Youth Dialogues – Limpopo (Sedawa, Turkey, Willows, Madeira)** **-Income diversification individual interviews - all areas (x15)**
Implementation and capacity development for innovation (3) and multi-stakeholder platforms (3)	2022/11/18 2022/11/10 2022/12/01 2023/02/23 2023/02/28 2023/03/08,09 2023/03/89,29, May-July 2023 2023/03/30, 06/02 2023/04/26 2023/05/09 2023/07/10-15 2023/08/18 2023/08/29 2023/08/30 2023/09/04 2023/09/08 2023/09/13 2023/09/22-24 2023/08/23, and 09/27 2023/07-12 **2024/03/12,20**	-SKZN: Centocow P&D control cross visit and learning workshop -uThukela water source forum: Visioning and action planning – Bergville -Adaptation Network AGM -Regenerative Agric farmers' day in Bergville incl Asset research, uThukela Water Source Forum, uThukela Development Agency -Adaptation Network: CCA financing dialogue -SANBI_gender mainstreaming dialogue -WRC-ESS: Bglv Ezibomvini, Stulwane – resource management mapping and planning Bergillve:Stulwnae weekly community resource management workdays -Okahlamba LED forum -Farmers X visit between Bulwer (supported by the INR0 and Bergville around CRA, fodder and restoration -PGS-SA: market training input: Online training Session 5 -Giyani Local Scale Climate resilience Project: Introduction of CCA model and local water governance options. -World Vision: CCA workshops for women cooperatives and LED project (60 participants) -Giyani Climate resilience project: Input into WRC reference group meeting -KZN DARD_ Okahlamba Agricultural Show: display and talk ACDI: Dialogue on community adaptation and resilience (Stellenbosch) Food systems article for newsletter WWF-Business Network meeting (SAPPI Durban)- presentation Joint Bergville learning group local marketing review session Gcumisa_multistakeholder innovation meeting – with the INR, ~60 participants (value adding, stokvels and local marketing Food systems dialogue: online event Uthukela water source forum: Core team meeting and Multistakeholder field visit around community resource conservation in Stulwane (Bgvl) -LIMA -Social Employment Fund: Training for work teams and employed youth in nutrition, value adding, climate change adaptation and agroecological gardening practices including soil and water conservation in 7 areas: Zululand, SKZN, Lichtenburg, Sekororo, Musina and Blouberg (140 participants trained). **Northern Drakensberg collaborative multistakeholder meeting in Bergville (55 participants)**
Indicator development for evidence-based indicators, M&E and handbook development	2023/01/30- 02/03 2023/02/02 2023/01/18 2023/01/18 2023/02/20 March-May 2023 June 2023 **2023/10/16-20, 11/13-16** **2024/02/26** **May-July 2024** **31/05/2024, 07, 12, 18 /07/2024**	Limpopo: Focus Group discussions for VSLA and microfinance for the rural poor x 3 (Turkey, Worcester, Santeng) Garden monitoring: -SKZN: Plainhill -EC: 5 villages CA monitoring -EC:5 villages -KZN: Bergville -30, Midlands 15, SKZN 15 -All areas: Poultry production list -All areas: Livelihoods survey for farmgate sales and asset accumulation **-M&E resilience indicator development team meeting and process with Karen Kotschy** **-Design of framework** **-Development of individual interviews and Participatory impact assessment outlines for testing. Interviewing of 120 participants across KZN,EC and Limpopo and running of 10 PIA workshops** **- Initiate development of analysis platform and dashboards for Climate resilience impact assessments**
Implementation of sustainable water management	2023/01/03-02/03 2023/03/07 2023/03/25, 06/15 2023/04/25, 06/01,02, 06/14.	KZN: Bergville: Stulwane – Conflict man and upgrading spring protection. EC: Nkau: Water walk and meetings for spring protection and reticulation. KZN: Bgvl Stulwane_ Engineer visits (Alain Marechal) for scenario development and follow up planning meetings with community. Set up committee, work parties and start on quotes and budget outline

	2023/07/26-28, 09/14,10/09-14, 11/06-10, 12/05-15, 2024/01/21-02/02	KZN: Bgvl Vimbukhalo: Governance of communal borehole water supply KZN: Bgvl Stulwane_ Engineer visits (Alain Marechal) for scenario development and follow up planning meetings with community. Set up committee, work parties and start on quotes and budget outline. Work on scheme initiated. Final implementation of scheme.
Organisational & capacity development	2022/11/17 2022/12/05 2023/02/13 2023/02/09, 02/16 2023/03/06 2023/03/13 2023/04/17 2023/05/26 2023/06/12 2023/07/04 **2023/10/09** **2023/10/16** **2023/10/17** **2024/02/26**	-MDF AGM and organisational capacity development workshop -Mentoring and planning with new finance officer to implement SODI financial reporting system - Internal short learning event for rainfall and runoff results, as well as soil fertility and Organic carbon - Mentoring in CCA workshop implementation. Temakholo from Midlands assisted Bergville team -Team session on gender mainstreaming - UKZN- Ecological mapping and use of resource planning – Bgvl team -VSLAs review and discussion re group based rules, BLF updates - Nutrient analysis for livestock fodder options: facilitated by Brigid Letty from the INR -Small business development support planning and Livelihoods survey -MDF AGM and organisational capacity development workshop **Conservation agriculture participatory research outcomes and presentation for CA forum with interns and staff** **- Training plan development with interns** **- M&E frameworks discussion with Karen Kotschy and team members** **-Financial team: Introduction to online Sage platform**

Communication and innovation

This aspect relates to platforms for sharing and learning with clusters of learning groups (LGs). No activities were undertaken here between March and July 2024.

Multistakeholder platforms

To date the research team has participated in a range multistakeholder platforms, networks and communities of practices (CoPs) towards developing a framework for awareness raising, dissemination and incorporation of the CbCCA-DSS methodology into local and regional planning processes and developing methodological coherence for a number of the themes to be explored in this brief.

The table below outlines actions and meetings to date.

Table 2: Planning and multi stakeholder interactions for the CCA-DSSII research process: August 2024

Organisation	Activity - Description	Dates
Asset Research-Maize Trust, SODI	Regenerative Agriculture farmers' open day in Bergville Annual Maize Trust CA forum workshop, Bethlehem – MDF presentation **9th World Conference in Conservation Agriculture (Cape Town). Presentation of 3 papers (E kruger, T Mathebula and N Mbokazi and Smallholder farmers panel member.**	23rd Feb 2023 10th October 2023 **23rd-26th July 2024**
Zylem and Regen-Z (sustainable agriculture company-KZN)	**Collaboration in farmer level experimentation with application of liquid supplements for soil health and testing of 10 varieties of climate adapted maize with 10 farmers in Bergville, KZN. Planning for 2nd round of experimentation and distribution of input packs to smallholder farmers**	**December 2023-May 2024** **9th July 2024**
ESS research - WRC	UKZN research in ecosystem services mapping supported by MDF: water walks, focus group discussions, planning, eco-champs, spring protection work in Stulwane, thematic and mapping workshops in Ezibomvini and Stulwane, local level planning and implementation. Cross visit Ezibomvini to Stulwane to see resource management work	23rd September 2022 14th October 2022 13,29,30 March 2023 1-30th May 2023 29th September 2023 18th October 2023

	Finalisation and handover of maps, updated community resource management plans for Ezibomvini and Stulwane Final report preparation and ref group meeting **Planning of farmer level cross-visit between Hlatikhulu and Bergville communities involved in Community level resource management and EbA activities (Endangered Wildlife trust and MDF**	22nd November 2023 **9th, 18th July 2024**
WWF Water source forum (Northern Drakensberg Collaborative)	uThukela catchment partnership: Stakeholder meetings, online and in person at OLM board room Bergville (new name: Northern Drakensberg Collaborative). Development of vision, membership profile, constitution and core team and full collaborative meetings Core team meeting for visioning and constitution development Multistakeholder field day for community level resource conservation in Stulwane, Bergville. **Core team meetings and planning of stakeholder event for August 2024. 9EWT farmers' ross visit** **Development of catchment partnership proposal with Lewis Foundation**	29th September 2022 10th November 2022 11th April 2023 23rd May 2023 23rd August 2023 28th September 2023 **3rd March, 31st May, 7th July and 8th Aug 2024.** **24th-26th March, 8th and 18th July, 14th Aug 2024**
SANBI- Living Catchment Programme	Social facilitation capacity building workshop – Western Cape; M Malinga Olifants' water indaba: M Malinga, N Mbokazi, H Hlongwane, B Maimela and E Kruger Video on local initiatives in catchment management	3rd-5th October 2022 30th Oct-2nd Nov 2022 24th March 2023
SANBI	Climate change adaptation and gender mainstreaming dialogue – presentation and participation SANBI newsletter- runoff impacts of restoration and CA **CCA and gender dialogue task team for planning 2024 event**	8th-9th March 2023 4th June 2023 **6th June, 27th July 2024**
Adaptation Network	Policy input and AGM Ongoing input and involvement in the Capacity development working group: to implement the new Civil Society Organisation Skills Enhancement and Excellence Development (CSO SEED) project, funded by the Flanders government. Some of these activities include youth-led participatory videos on adaptation initiatives and some thematic field visits and exchanges between AN CSO member projects. Meetings with AN to discuss capacity building and outline CCA training for Socio technical Interface NGO in Hammanskraal AN newsletter: Food systems article by Tema Mathebula AN-AGM **AN-Colloquium (Cape Town) Dialogue and presentation on CC vulnerability assessments and MERL frameworks (Betty Maimela).** **'EbA farm' – Adaptation fund planning with SANBI**	13th October 2022 1st December 2022 7th , 8th Feb 2023 15th March 2023 **13th June 2024** 11th May 2023 15th June 2023 20th September 2023 16th November 2023 **14th-17th July 2024** **3rd may, 27th June 2024**
PGS-SA	Quarterly meeting: Discuss mapping of PGS organisations, finalisation of certificate and use of seals and logos. Finalisation of smallholder farm assessment form PGS-Certification working group Online market development training: Input into session 5	17th Nov 2022 13th Feb 2023 9th May 2023
Okhahlamba LM	Agriculture and Land summit: MDF presentation and marketing stall: All Bergville staff, farmers representatives and eco champs Okahlamba LED forum meetings OLM – support with transport for farmers' markets and tractors for field preparation Okhahlamba Agricultural show	30th November 2022 30th March 2023,7th June 2023 Ongoing 29th August 2023
Afromontane research Centre	Maloti-Drakensberg Climate Change Workshop Wageningen/UFS: Land futures course - Bgvl	12-14 December 2022 7-10th March 2023
Water Research Commission/ AWARD	Giyani Local Scale Climate Resilience Project: Support for CCA and VSLAs	8-10th May 2023 10th-14th July 2023 30th-31st October 2023

	Water governance and infrastructure management community dialogue in Mayephu, Giyani – for development of guidelines and proof of concept WRC- ref grp meetings for: Enterprise development and innovation for rural water schemes- GLSCRP	3rd and 29th November 2023**, 24th June, 3rd July 2024**
Umzimvubu Catchment Partnership and ERS– *Nicky McCleod, Sissie Mathela*	Webinar to review CRA and spring protection implementation and plan for future projects Planning for combined spring protection in Nkau and next deliverable Multi stakeholder governance inputs	8th Nov 2022 15th June 2023 2nd August 2023
AWARD – Derick du Toit	Meeting in Hoedspruit to discuss AWARD's contribution Youth induction programme– Tala Table network Planning for CRA learning group expansion, Mametja-Sekororo PGS continuation. Group marketing review and farm level assessments **Youth dialogues in 5 villages. Outline for proposal to DKA**	2nd November 2022 30th January 2023 22nd March 2023 8th May 2023, 29th September 2023 **April-July 2024**
Karen Kotshcy	Learning in M&E interest group meeting. Discussions re methodology for UCP and Tsitsa project multi stakeholder engagement evaluation Discussions and MoU development for M&E framework and indicator development and submission of report for WRC deliverable 4. **Development of Climate resilient indicators for CbCCA**	11th November 2022 15th May 2023 24th May 2023 **16-20th October, 13th-16th November 2023** **8th and 19th February 2024, 27th June, 8th and 12th July 2024**

3. CbCCA Case Studies in 3 agroecological zones

By Nqe Dlamini, Erna Kruger, Betty Maimela, Temakholo Mathebula, Hlengiwe Hlongwane, Nqobile Mbokazi, Siphumelelo Mbhele and Anna and Karen Kotschy.

3.1 Preamble

To enable the compilation of case studies in community based climate change adaptation (CbCCA) the monitoring and evaluation framework developed in the WRC project entitled *Climate change adaptation for smallholder farmer in South Africa,*(WRC K5-2179-4) (Kruger, 2021), has been reviewed and updated to allow for greater methodological coherence and improved measurability of the climate resilient indicator sets outlined.

The resultant framework was used to design individual interviews (resilience snapshots) and a participatory impact assessment outline for focus group discussions, emphasising the human, social and governance aspects of the process.

The following interviews and PIA workshops were undertaken between May and July 2024

Table 3: CbCCA interviews and focus groups undertaken in different agroecological zones.

Province/area	**Agroecological zone** (HarvestChoice; International Food Policy Research Institute (IFPRI), 2015)	**Villages**	**Number of individual Interviews**	**PIAs (focus group discussions)**

Limpopo- Mametja-Sekororo	Tropic – warm -semi-arid	Willows, Sedawa, Santeng, Worcester, Turkey	20	Willows(33) Sedawa (19)
Eastern Cape – Matatiele	Sup tropic-cool- semi-arid	Nchodu, Ned, Nkau, Rashule	17	Nchodu (18) Ned (22)
KwaZulu Natal – Northern Drakensberg	Sup tropic-cool-Subhumid	Eqeleni, Ezibomvini, Stulwane, Vimbukhalo, Ezinyonyane	20	Eqeleni(13) Ezibomvini (15) Stulwane (35)
KwaZulu Natal – Southern region	Sub tropic cool subhumid	Mahhehle, Ngongonini, Centocow, Matirathal	20	Mahhehle (36) Centocow (32)
KwaZulu Natal – Midlands	Sub tropic warm subhumid	Ozwathini, Mayizekanye	13	Ozwathini(22) Mayizekanye (26)
TOTALS		**20**	**90**	**271**

The three areas chosen for CbCCA case studies are Mametja-Sekororo, Matatiele and Bergville.

3.2 METHODOLOGY

Revision of farmer-level resilience indicators for Mahlathini Development Foundation

a. Introduction

Mahlathini Development Foundation (MDF) has spent many years developing and refining various tools for monitoring and evaluating their 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 only every 6 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 bringing together 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.

In May 2023, MDF initiated a process to strengthen and further develop the Resilience Snapshot so that it is more strongly tied to resilience theory and more generalisable across agro-ecological zones and hierarchical levels.

MDF conceptualizes climate change adaptation for smallholder farmers through climate-resilient agriculture or CRA on three nested levels: micro-, meso- and macro-levels (**Error! Reference source not found.**). 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 out to include other players such as local and national government, civil society organizations (CSOs), non-governmental organizations (NGOs), 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 are able to benefit from the support of these diverse stakeholders (e.g. through relationships, learning exchanges and training).

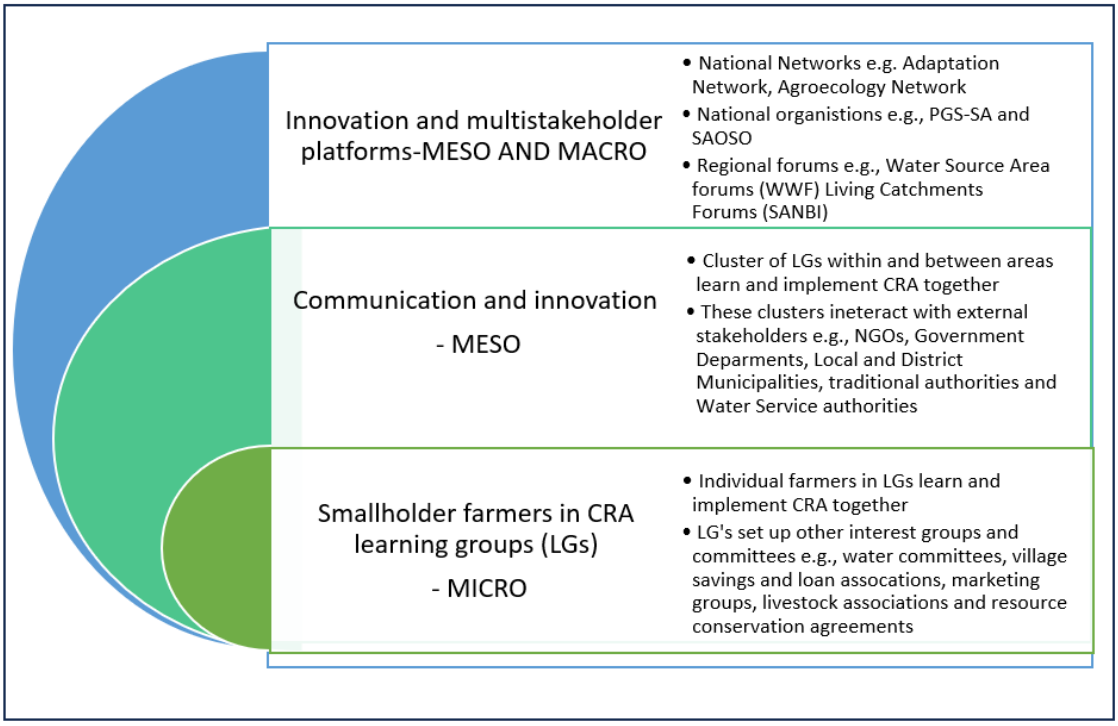


Figure 2: Micro-, meso- and macro-levels of organisation for climate-resilient smallholder agriculture

b. A theoretical foundation for assessing resilience of smallholder farming systems

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 and Oelofse, 2012) with the concept of absorptive, adaptive and transformative resilience capacities as used by Oxfam and others (Jeans et al., 2017), to produce the theoretical framework shown in the figure below.

Cabell and Oelofse's (2012) indicators of agro-ecosystem resilience have a solid foundation in that they are based on the resilience principles outlined by Biggs et al. (2012), Biggs et al. (2015) and numerous other resilience scholars (see Folke, 2006 for an overview). Cabell and Oelofse (2012) present thirteen behaviour-based indicators[1] which together provide a measure of agro-ecosystem resilience, particularly for smallholder farmers (see Table 4). Agroecosystems are defined as social-

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

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, 2012).

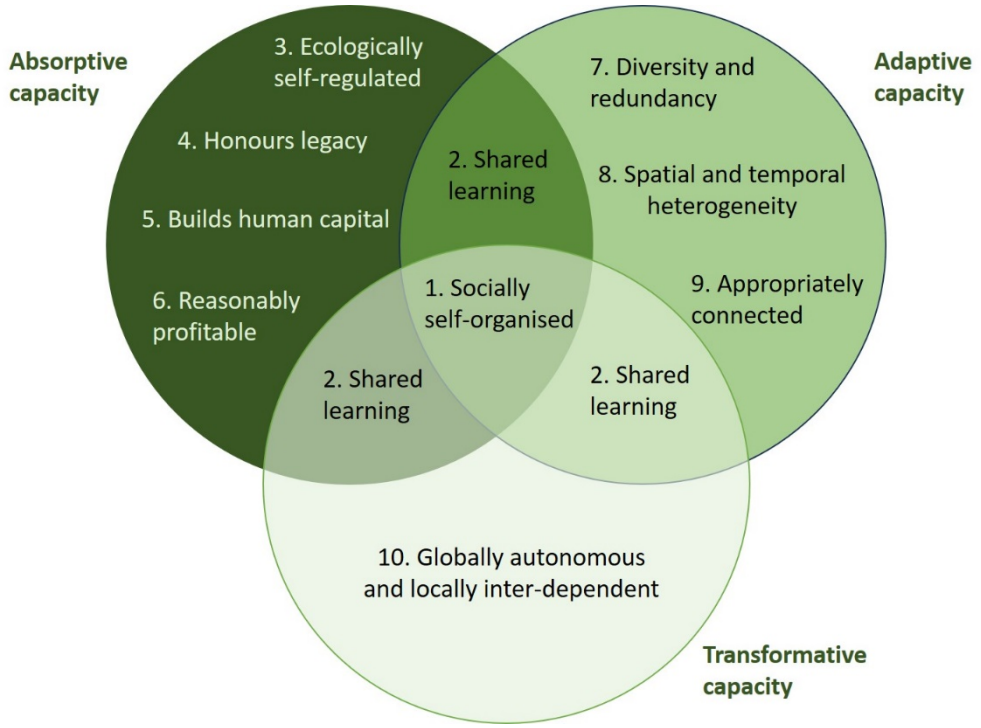


Figure 3: Theoretical framework for assessing resilience of smallholder farmers. Based on Cabell & Oelofse (2012) and Jeans et al. (2017).

Cabell and Oelofse's framework forms the basis for the SHARP+[2] tool (Hernandez et al., 2022; https://www.fao.org/in-action/sharp), which is being widely used by the FAO and others to assess 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 et al., 2016). 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 (Jeans et al., 2017). This is in line with prominent resilience scholars' characterisation of resilience as having dimensions of persistence, adaptability and transformability in complex social-ecological systems (Walker et al., 2004; Folke, 2006; 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

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

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 (Jeans et al., 2017).

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.

c. Revision of the MDF resilience snapshot tool

The SHARP+ tool was considered too complicated for MDF's current purpose, as it involves a very lengthy survey which MDF felt would not be practical in the contexts in which it works. Although the length and the questions can be customised to some extent, it was considered not ideal to combine all the monitoring and evaluation into a single survey carried out at one point in time. As described above, MDF staff already do several different types of monitoring and evaluation activities with farmers on different time scales, because different activities require different monitoring frequencies. Furthermore, MDF's Resilience Snapshot tool has been tested and refined for the South African context over many years. It was therefore decided to align what MDF is already doing with the Cabell and Oelofse framework, and to strengthen and modify the Resilience Snapshot where necessary.

Comparing the Resilience Snapshot indicators with the Cabell and Oelofse (2012) aspects of agroecosystem resilience (Table 1) revealed that the Resilience Snapshot did cover most areas, although some more strongly than others. By comparison, the Committee on Sustainable Assessment's (COSA)[3] resilience indicators used by the Adaptation Fund do not cover all the aspects of resilience (Table 4).

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).

Table 4: Alignment of the MDF Resilience Snapshot indicators and the COSA resilience indicators with the dimensions of agroecosystem resilience described by Cabell and Oelofse (2012)

Cabell & Oelofse (2012) Agroecosystem resilience	**MDF Resilience Snapshot**	**COSA resilience indicators used by Adaptation Fund**
ABSORPTIVE CAPACITY (STABILITY)		

[3] A non-profit independent global consortium which has developed an indicator library for resilience. COSA indicators are aligned with global norms such as the SDGs, multilateral guidelines, international agreements, and normative references. The indicators ensure comparability and benchmarking across regions or countries, making it easier for managers and policymakers.

Socially self-organised - social components able to form their own configuration based on their needs and desires (e.g. grassroots networks, coops, markets, associations, advisory networks)	Collaborative actions/ social agency	
Reflective and shared learning - collaborations, knowledge sharing, record-keeping, ability to learn from past experimentation	Informed decision-making (information used)	Access to information Early warning systems
Ecologically self-regulated - stabilising ecological feedback mechanisms (e.g. maintain cover, soil health, regulate predators & pests, use ecosystem engineers)	Embodied in soil and water conservation practices of agro-ecology and conservation agriculture	SWC practices, including integrated pest management
Coupled with local natural capital - using local natural resources and ES, reduced need for external inputs	Increased water use efficiency (including rainwater harvesting, water holding, water access, and water productivity)	
Honours legacy - maintaining memory of past conditions and experiences (e.g. heirloom seeds, elders, traditional practices)	Informed decision-making (information used)	Access to information
Builds human capital - constructed (economic activity, technology, infrastructure), cultural (individual skills and abilities), and social capital (social organizations, norms, networks)	Savings Collaborative actions/ social agency	No. of agricultural productive assets (equipment, livestock, land)
Reasonably profitable - farmers able to make a livelihood, able to invest in the future (buffering capacity), not needing to rely on distortionary subsidies	Increased livelihood security (income) Increased livelihood security (household provisioning & food security) Increase in farming (size) Increased productivity Savings (safety, security, achievement) Positive mindsets	Net household income
ADAPTIVE CAPACITY (FLEXIBILITY)		
Socially self-organised - social components able to form their own configuration based on their needs and desires (e.g. grassroots networks, coops, markets, associations, advisory networks)	Collaborative actions/ social agency	
Reflective and shared learning - collaborations, knowledge sharing, record-keeping, ability to learn from past experimentation	Informed decision-making (information used)	Adoption of new practices/equipment Access to information Early warning systems
Appropriately connected - relationships between system elements. High no. of weak connections imparts flexibility, few strong connections imparts dependency and rigidity (e.g. no. of suppliers, outlets, farmers, crops)	Collaborative actions/ social agency?	
Functional and response diversity - diversity of ES, inputs, outputs, markets, income sources, pest control. Diversity of response options to environmental & other changes.	Increased diversity in farming Increased diversity of practices Increased water use efficiency Increased livelihood diversity options	Adoption of new practices/equipment Diversification of income

Optimally redundant - duplication (partial functional overlap) of components and relationships in the system (e.g. crop types, equipment, water sources, nutrient sources, sales outlets), but not so that it is too costly/unwieldy	Increased diversity in farming Increased diversity of practices Increased water use efficiency Increased livelihood diversity options	No. of income sources
Spatial and temporal heterogeneity - patchiness of land use, rotations, practices, in space and over time	Increased growing season Increased diversity in farming (gardening/ fieldcropping/ livestock/ trees)	
Carefully exposed to disturbance - disturbance not excluded totally but managed where possible (e.g. pest and disease exposure allowed to promote selection and resistance)		
TRANSFORMATIVE CAPACITY (STRUCTURAL CHANGE)		
Reflective and shared learning - collaborations, knowledge sharing, record-keeping, ability to learn from past experimentation	Collaborative actions/ social agency	Adoption of new practices/equipment Access to information Early warning systems
Socially self-organised - social components able to form their own configuration based on their needs and desires (e.g. grassroots networks, coops, markets, associations, advisory networks)	Informed decision-making (information used)	
Globally autonomous and locally inter-dependent - relative autonomy from exogenous control, but with a high level of cooperation locally	Collaborative actions/ social agency	

Specific, measurable indicators were then developed for all the aspects of resilience and resilience capacity as shown in Figure 3, using the existing indicators in MDF's Resilience Snapshot and the COSA indicators as a starting point. Further development is still required, for example to add the methodology, people responsible for data collection and analysis, frequency of collection and data limitations for each indicator.

Ongoing work will involve developing a visually engaging way of presenting and sharing the data. This could include:

- A "traffic light" system (red, orange, green) for each indicator to provide a simple overview of status and progress.
- Web-based dashboards which convert the data into engaging visual representations (e.g. graphs, charts, tables, word clouds) and make it accessible to stakeholders.
- An interactive network mapping tool such as Kumu (https://kumu.io/), which allows stakeholders to map and visualise their connections interactively and can also be used to gather and analyse data such as numbers and types of connections, strength of connections and social self-organisation.

Table 5: 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 which 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. Ecogically self-regulated			
3.1 Increased water use efficiency Five fingers indicators 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 and diseases, 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)
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 savings are being used	List of options
5.3 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, 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 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 wellbeing.	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
7.2 Increased diversity of farming activities	Having a diversity of farming activities also increases response diversity and provides for 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 which 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 agro-ecosystem (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, Conservation Agirculture, 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 water supply reduces the impact of failure of one source.	List of water sources available to 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 farmer.	Average no. of nutrient sources, overall and per farmer
7.7 No. of suppliers	Redundancy in of 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 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 practice 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 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 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
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 on 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 5 5 was how to promote coherent monitoring and evaluation across the different scales (micro-, meso- and macro-levels as shown in Figure 2). 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.

3.3 MERL TOOLS DEVELOPED

The resilience snapshot was improved and updated to incorporate the methodological considerations 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 as outcome assessments for projects, but rather to highlight changes the participant has made to adapt to climate change and the assessment of the improved resilience from such changes. It is foreseen that it can be useful to undertake these snapshots repeatedly over time to get an indication of ongoing improvement for the participant.

In addition to the individual interviews, there are aspects of resilience, notably social organisation, changes in human capacity and learning related to climate change that is 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 outline of 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.

Results from these three tools have been collated, analysed and summarised into the case studies presented below.

3.4 AGROECOLOGICAL ZONE CLIMATE RESILIENCE CASE STUDIES

The community-based climate change adaptation approach and methodology used in all three provinces has relied on village level learning groups and clusters of learning groups undertaking

cyclical analysis, implementation and review processes to explore adaptive strategies and processes for adaptation to climate change, as shown in the figure below.

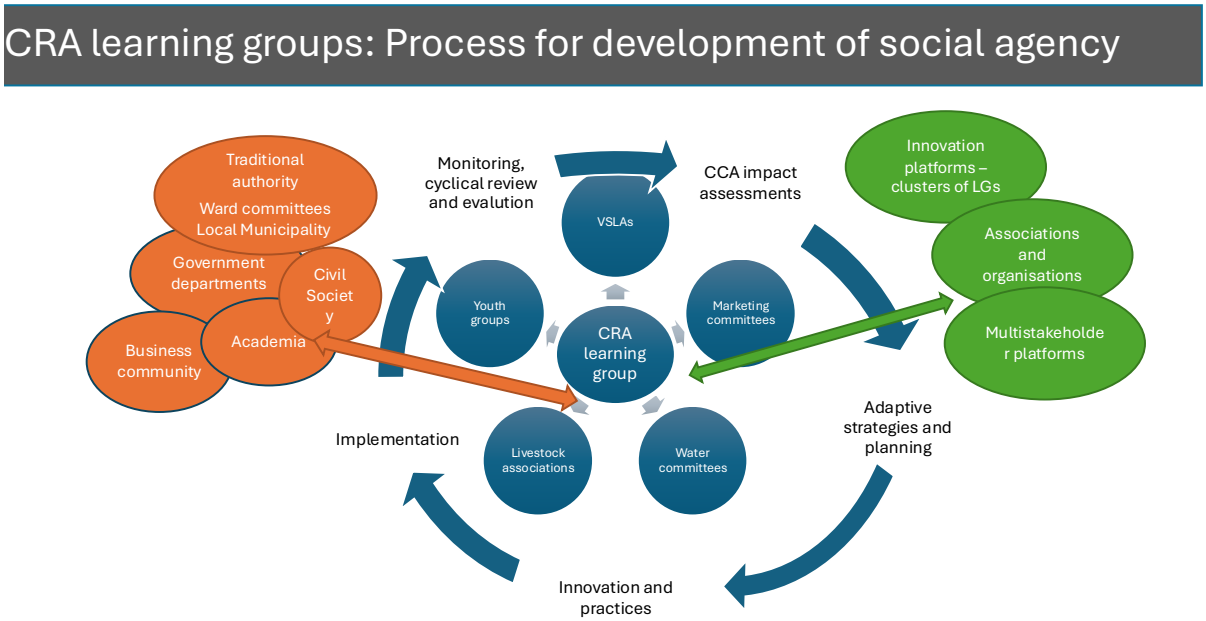
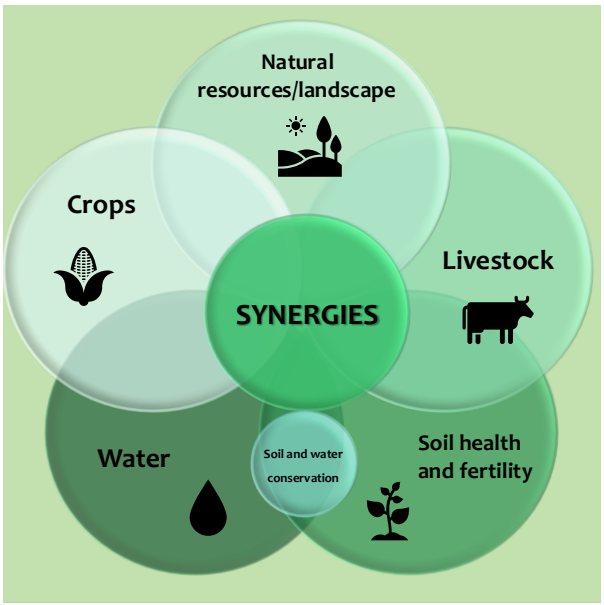


Figure 4: An outline of the learning group approach and processes for adaptions to climate change.

Incorporation of aspects from different themes within the smallholder farming system and the natural landscape has been undertaken through a 'Five fingers" model to allow for implementation across a wide range of activities including climate resilient agriculture, water and natural resources management and stewardship and local governance.

Figure 5: the Five Finger model for implementation of adaptive strategies to allow for a coherent systemic approach and development of synergies across activities.



Climate Resilient Agriculture and innovation system development for sustainable and productive use of land and water has broadly included the following activities:

Conservation/ Regenerative Agriculture: (LEI) Quantitative research support to the Smallholder Farmer Innovation Programme; intercropping, crop rotation, cover crops, fodder production

Livestock integration: Winter fodder supplementation, hay baling, conservation agreements, local livestock auctions

Intensive homestead food production: Agroecology; tunnels, trench beds, crop diversification, mulching, greywater management, fruit production

Village savings and loan associations: Village based savings groups for savings and small loans for productive activities and

Local marketing and food systems: Monthly produce market stalls organised per village, exploration of further marketing options, small mills for maize.

Water and Natural Resource Management for sustainable and productive use of land and water have broadly included the following activities:
Community owned local water access: Water committees, spring protection, water reticulation, pipes and tanks at homestead level and
Soil and water conservation: village-based learning groups in Climate Change Adaptation undertake resource conservation activities.

For each CRA learning group community members prioritized the basket of activities most important to them. Thus, different practices were prioritized and implemented in different villages and areas. In Limpopo for example, in the dry and hot Mametja-Sekororo region participants prioritized intensive homestead food production, while in Bergville, KZN participants strongly prioritized dryland field cropping and livestock and Matatiele in the north-eastern Eastern Cape participants favoured gardening and poultry production and field-cropping in others.

A. Mametja-Sekororo (Limpopo) climate resilience case study

This area falls within the Lower Olifants' river basin. It falls within the warm sub-tropical, dry savannah agroecological zone, with average annual temperatures of 28 °C, extremely hot conditions prevailing in summer, and warm winters. Average annual rainfall is around 550mm. Evaporate potential is around 1200mm and far exceeds rainfall.

A key vulnerability identified for the region is that of the potential for increasing food insecurity under changing climatic conditions, especially for the poor in former Apartheid bantustans into which many people were forcibly re-settled. Communal areas tend to be densely populated and over utilisation of natural resources combined with a lack of management of these resources has led to erosion and reduction of water availability, leading to severe water stress in these villages. In addition, between 70-80% of inhabitants are entirely reliant on social grants (child grants and pensions) for their incomes. Thus, pressure on existing natural resources to fulfil basic needs (grazing for livestock, firewood, plants for food and medicine and water) is likely to continue and intensify. Not only are poor land-use practices impacting production and ecological health and integrity, but these impacts are greatly exacerbated under hotter and more erratic rainfall conditions that are predicted for the lowveld through climate change (AWARD-BOOKLET-Climate-smart-agriculture-lower-Olifants-Catchment-2018-v3.pdf).

Climate change impacts of increased heat (throughout the year) and increased variability in rainfall patterns with associated decrease in water availability, cop failures, livestock mortality and increased pest and disease incidence as well as the decrease in natural resources, were strongly perceived by community members in this region. The negative impact on participants' livelihoods and the social fabric of their communities has also been emphasised.

Mahlathini Development Foundation has been implementing a systemic approach to climate change adaptation and climate resilient agriculture in partnership with AWARD in the Mametja-Sekororo region of Limpopo since 2016. Work was conducted under 2 large USAID programmes – RESILMO and Resilient Waters and more recently under a SODI-BMZ funded community- based climate change adaptation programme. Close cooperation and sharing of information and learnings with other NGOs

such as K2C, CSA, Seeds of Light, Lima-RDF, World Vision and ACB was important throughout the implementation processes. Other major stakeholders in the lower-Olifants water and biodiversity stewardship landscape have included SANBI and the WRC, among others.

Work has been undertaken in 7 villages, with around 250 smallholder farmers. The case study focused on 5 villages (Willows, Sedawa, Santeng, Worcester and Turkey), with 20 individual snapshot interviews conducted and two participatory impact assessment (PIA) sessions in Willows (33 participants) and Sedawa (19 participants) respectively.

The following table provides a summary overview of the Adaptive and Absorptive capacity indicators for Limpopo (n=20)

Absorptive capacity			
Socially self-organised	Collaborative actions/social agency	Change in no of groups (Ave). E.g., Learning groups, savings groups, water committee, livestock association, policing forums	2
Shared learning	Increased knowledge sharing	Change in types of knowledge shared (Ave). E.g., Written information, learning groups, local facilitators, other farmers	2
Ecologically self-regulated	Water use efficiency	Change in no of practices for improved water holding (Ave). E.g., trench beds, tunnels, tower gardens, mulching, small dams, mandala beds, JoJo tanks	4
		Change in no of practices for reduced run-off (Ave). E.g., Diversion ditches, furrows and ridges, banana basins, stone bunds	2
	Improved soil health	Improved soil structure (% of respondents)	80%
		Improved organic matter	50%
		Fewer pests and diseases	90%
		Better able to deal w drought	50%
Honours legacy	Traditional practices	No of practices in use (Ave). E.g., Timing and planting of Bambara groundnuts, seed saving, traditional seed storage techniques	1
Reasonably profitable	Increased livelihood options	Ave change in no of options. E.g., Farming, small business, part time employment	1
	Increased income	Ave monthly income change (ZAR)	R1 222,22
	Increased food security	Ave no of food types consumed weekly. Five food types eaten 1-3 times per week - shows good nutritional diversity for rural communities	5
	Increased productivity	Ave change in no of crops (garden and field). Including spring onions, kale, brinjal, green pepper, beetroot, carrots, Sun hemp, Dolichos, Sorghum, lucerne mustard spinach, coriander, parsley, broccoli, lettuce,	11
		Change in no of fruit trees. Including lichi, mango (Tommy, Kiet), avocado and Macadamia	3
	Incrreased savings	Change in monthly savings (ZAR)	R462,50
	Positive mindsets	Scale (0 to 2).0=same or worse, 1=somewhat improved and 2=much improved	2
Adaptive capacity			
Increased diversity in farming	Farming activities (gardening, field cropping, livestock, fruit trees)	Ave change in no of farming activities. Mostly due to now doing gardening activities that weren't undertaken before and fruit production. A few participants have included small livestock in the form of poultry.	2
Increased CRA practise diversity	Adoption of new practices	Ave change in no of CRA practices. Including tunnels, trench beds, shallow trenches, eco-circles, tower gardens, drip irrigation, mulching, liquid manure, underground rainwater harvesting, small dams, crop rotation, mixed cropping, Conservation Agriculture, furrows and ridge , banana basins, seed saving and propagation from seed.	8

Increased water sources	Names of sources	Ave change in no of water sources. New group based local schemes with boreholes, rainwater harvesting, but mostly no new water sources for access	1
Redundancy in nutrients, inputs supplier	Names of inputs	Ave no of inputs/supplier types. Including VKB, Obaro, Alzu, Parma, Provet.	4
	Names of nutrients	Ave no of nutrient types. E.g., Kraal manure, compost, mulching, liquid manure	1
	Names of suppliers	Ave no of sales outlets. Including Local(farmgate), market stalls in Hoedspruit, Meat Natural Auctions, Makhona supermarket	1
Spatial and temporal heterogeneity	Increased growing season	Gardening (% of respondents)	100%
		Field cropping (% of respondents)	0%
		Livestock and/or Fruit (% of respondents)	40%
	Mixed cropping	Now practising (% of respondents)	100%
	Crop rotation	Now practising (% of respondents)	90%
	Livestock integration practices	Grazing management, restoration, firebreaks, fodder production etc	0%

In Mametja-Sekororo in Limpopo the CRA learning group participants have primarily focused on household food production (gardening, small livestock integration and fruit production) as the change in climate has already rendered dryland field-cropping untenable as an activity. Even at household level access to water for production is severely limiting for most households in the region. Learning group members have been involved in local water access group-based schemes from drilling of new boreholes and have increased their rainwater harvesting and storage options. They have enthusiastically incorporated many climate resilient agriculture (CRA) practices introduced through the interventions, with an average of 8 new practices for each participant and have equally enthusiastically incorporated a range of vegetable, field and fodder crops into their farming system, with an average of 11 crop types that were not cultivated prior to the interventions. They have also increased their growing seasons by planting at different times and more consistently through the year as well as including different crop types that yield better under the changing seasonal conditions. They are using mixed cropping and crop rotation to good effect to improve soil fertility and soil health as well as water use efficiency.

IN terms of absorptive adaptive capacities participants have increased their livelihood options through farming and small businesses and have managed to improve their productivity, incomes and savings. They are socially better connected and collaborate and learn in a number of new ways and generally fell a lot more positive about their future.

The sunburst diagram below shows the proportion (%) of participants who have undertaken different CRA practices. Those practices where only <6% of participants undertook the activity have not been named in the diagram. The largest uptake was for trench beds, mixed cropping, crop rotation, micro-tunnels and mulching. These practices had the most immediate impact on crop growth and improving yields and have been very popular with participants.

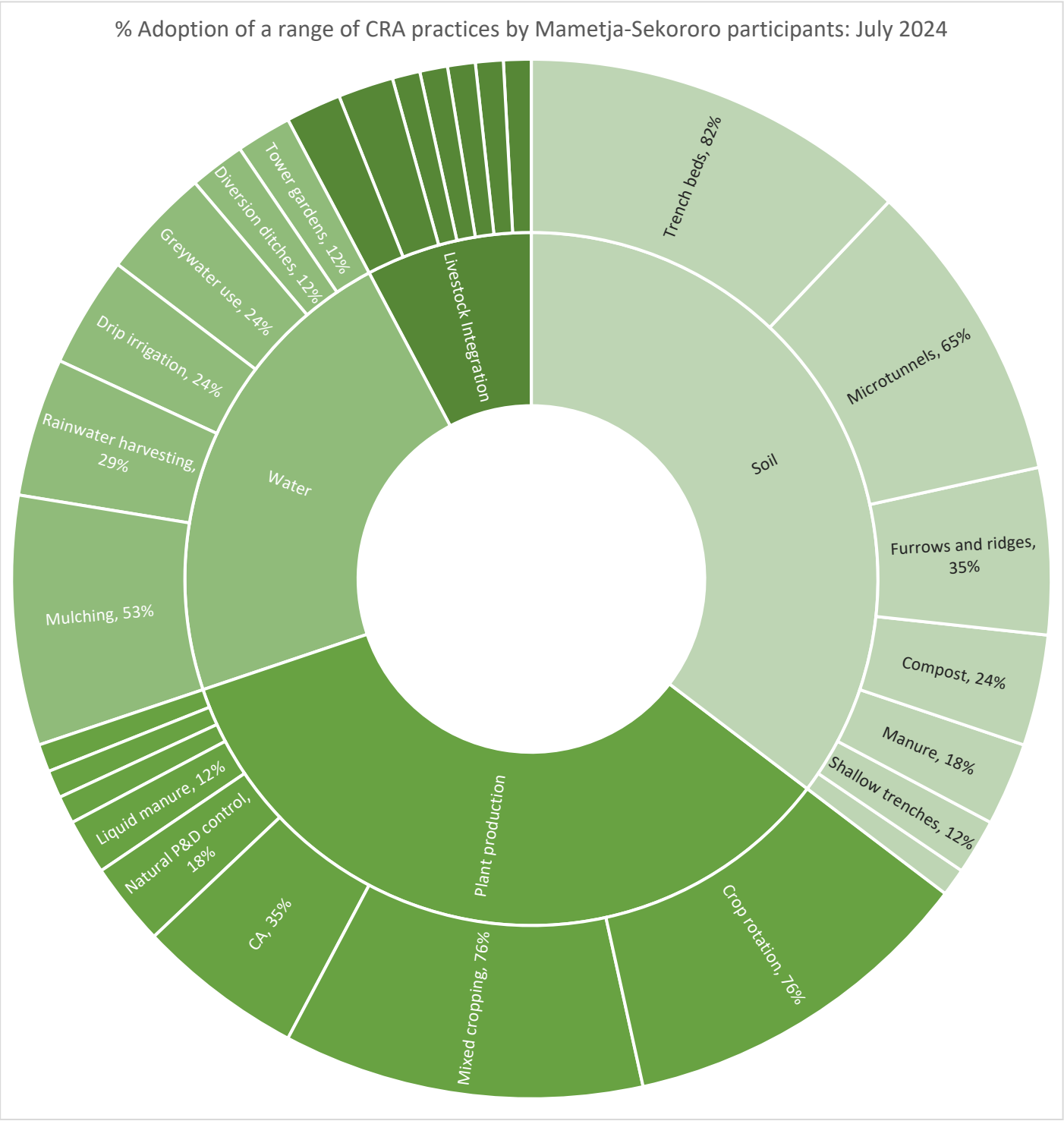


Figure 6: Diagram indicating uptake of CRA practices by learning group members in the Mametja-Sekororo region of Limpopo. July 2024. (n=20).

In the focus group discussions, participants also undertook a matrix ranking exercise to outline the effectiveness of the various CRA practices according to criteria that are important to them as farmers. The outcome of the exercise is shown in the table below, using a scale of 1-3 where:

1=worse/no change/harder

2= some positive change

3=a lot better

Table 6: Effectiveness of CRA practises taken up assessed with criteria developed by the group members for Sedawa, Limpopo, June 2024

EFFECTIVENESS OF PRACTICES: Limpopo, Sedawa_June24									
	Name of practice	**P&D control**	**Water**	**Crop quality**	**Climate control**	**Accessibility**	**Labour**	**Soil fertility**	
1	Tunnel	3	3	3	3	1	2	1	16
2	JoJo tank	1	3	1	1	1	3	1	11
3	Tower garden	3	3	3	2	1	2	1	15
4	Mulching	1	3	3	3	3	3	3	19
5	Underground RWH tanks	1	3	1	1	1	1	1	9
6	Trench beds	1	3	3	1	1	2	3	14
7	Kraal and chicken manure	3	1	3	1	3	3	3	17
8	Mandala beds	1	3	3	1	3	2	3	16
9	Diversion ditches	1	2	1	1	3	1	1	10
10	Stone bunds	1	3	3	1	3	3	3	17
11	Furrows and ridges	1	2	1	1	3	2	2	12
12	Compost	3	1	3	1	3	3	3	17
13	Mixed cropping	3	1	1	1	3	3	3	15
14	Poultry and livestock	1	1	2	1	1	3	3	12
15	Fruit production	1	1	1	1	2	3	3	12
16	Indigenous plants	3	2	1	1	3	3	3	16
		28	35	33	21	35	39	37	

Figure 5: A picture of the original matrix diagram developed by the Sedawa participants, from which the above table was developed.

For the participants the most significant changes have been in greater efficiency in labour and improved soil fertility from the range of practices they have assessed. The most significant CRA practices have been introduction of mulching, micro-tunnels, use of kraal and chicken manure, mandala beds, stone bunds, making of compost and incorporation of indigenous plants.

In Willows participants made the following comments based on their matrix ranking:

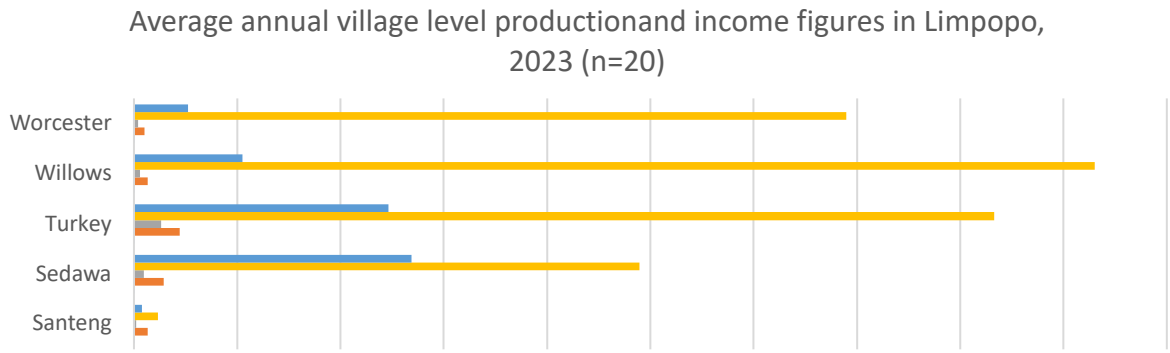
Participants who have been using tunnels have explained how grateful they are to have these and the huge impact on production that these tunnels have had. it has also encouraged them to work even harder and extend the shade netting area in their gardens to protect crops that are not inside the tunnel. Not burning of tree leaves and using them as mulch in their gardens has saved them water. In addition, participants implemented trench beds in numbers because they have observed the results of trench beds and tunnels from other participants and loved the results. Boshvelder chickens (a multi-purpose indigenous breed) were introduced last year, and more farmers want them, because they are

much better to house and look after, while selling both eggs and chicken as meat. The meat is found to be tastier than the broiler and indigenous chicken.

For crop yields and income, the following table summarizes the annual quantities for 5 of the villages in Limpopo where farmers have undertaken the climate resilient agriculture practices: a combination of gardening, field cropping, fruit and small and large livestock.

In this region due to the change in climatic conditions, participants have focused mainly on homestead food production as dryland field cropping has become untenable as an option. In the two villages – Sedawa and Turkey, where MDF assisted the communities with water access, the average production (amount in kgs) is substantially higher than in the other threes villages- Willows, Worcester and Santeng where lack of access to water for both household purposes and multiple use options is severely restricted. Average annual farming incomes in Willows and Turkey are substantially higher (~R44 000) than in the other three villages, mainly because livestock farming is prioritized, better organised and linked to external support related to local auctions for livestock Meat naturally and CSA). Santeng, which has the lowest average annual income (~R1 100) is also the village with the least access to water. For a large portion of the year, the villagers need to buy water to survive as there is no access to surface water in the village and springs and boreholes have been drying out.

On average the annual income for these farmers is around R36 600 and they have managed to increase their annual incomes by R 8 440 on average, through implementation of the CRA practices (See Attachment 4).



	Santeng	Sedawa	Turkey	Willows	Worcester
Average of increase in income	R 385.50	R13 438.30	R12 304.74	R5 251.88	R2 604.00
Average of Income	R1 152.50	R24 470.00	R41 659.00	R46 515.00	R34 476.50
Average of Inc in amount	115.0	474.3	1301.9	284.4	193.0
Average of Amount in kg	675.0	1430.5	2200.5	650.4	523.8
Average of Eaten	75%	59%	62%	73%	82%

Figure 6: Average production and income figures for farmers participating in CRA in Limpopo for 2023-2024.

The focus group discussions also explored the different organisations at village level, their relationships, importance to community members and their functions. In addition, they provided a focus for outlining the learnings and changes people have been making, to provide a qualitative view on adaptive capacity and improved resilience. The table below summarizes the different categories and numbers of both internal and external organisations present in their villages.

Table 7: Number and categories of internal and external organisations in two villages in Limpopo (July 2024)

Organisational clusters (Limpopo)			
	Sedawa (19)	**Willows (33)**	
Farming, livestock			
Internal	3 (poultry and crop farming coops and livestock association – DoA)	1 (Livestock association-DoA)	A number of NGOs operate in the region: AWARD, K2C, CSA, Meat naturally, World Vision, LIMA-RDF and MDF, but generally are quite specialised and work with a restricted number of individuals in the community. DoA is important but provides limited and sporadic support
External	2 (MDF, DoA)	4(MDF, LIMA, Meat Naturally, Department of Agriculture (DoA)	
Water			
Internal	1		Support for multipurpose water provision is lacking in Willows and no internal self-supply options were mentions
External	1 (MDF)		
Community engagement			
Internal	3 (drop-in centre, football)	4	Cultural clubs, child support centres, feeding schemes
External		2 (CWP, Hlokomela)	
Church			
Internal	4		In some villages churches aren't seen to support the community, but in others church members provide social support to the needy in their area
Savings			
Internal	14	9	Stokvels are a traditional practise and are common in the villages. The VSLAs are seen to differ as here people can save for productive activities and small businesses
external	1 (MDF)	1 (MDF)	
Funeral and ceremonies			
Internal	9	10	These groups are seen as important to maintain the social fabric and also assist people in managing cash flow for these ceremonies, which can be very expensive.

Mahlathini Development Foundation was given a central role in both villages as very important, being the only organisation explicitly assisting the communities to adapt to the quite devastating climate change impacts. Comments from farmers have included the following:

Willows: *Things are easy as we can use space available in our gardens and we do not have to purchase vegetables from shops. Farmers can implement different practices that work for their gardens and these practices have helped increase production and hunger will never affect them. It is the most important as it has helped farmers to do things on their own*.

Sedawa: *They have learnt to continue farming under difficult climatic conditions (hot and dry), sell and make an income. One can eat well from your garden and generate an income from a small garden. Life is better and less stressful*.

The Department of Agriculture is considered important, with the caveat that in recent years farmers have received little support. Presently they are assisted through the livestock associations but have not received any support in production for the last 4-5 years.

Support from the Traditional Authorities (TAs) appears to be a mixed bag, with those from Willows mentioning that the TA only assists with land allocations and community conflicts, but in Sedawa the TA plays a big role in the community for which the community is grateful. They have helped with

borehole installation for people to have access to water in the community, land allocations, help to solve community conflicts, installed WIFI hotspots for the community and have hired nighttime security patrols to control crime in the area.

Municipal Ward councillors only work in solving conflicts in the community, identifying poor people in the community, reporting electricity and water issues and the need for housing, but they do not assist in agricultural, livelihood or environmental management issues.

NGO support seems to be patchy, as they are present in some villages but not others and also tend to support specific smaller numbers of community members. NGOs such as AWARD, LIMA-RDF, World Vision, K2C, World Vision, CSA and Meat naturally provide learning, collaboration and limited support for agricultural, livelihoods, nutrition, livestock and resource management and small business development. There is little to no focus on climate adaptation, community organisation for resource management, water access and water management– functions that only MDF provide for in these communities.

Both the internally organised funeral and savings groups are well distributed within the two villages. Generally, groups have between 10-40 members, with a few being larger. This process has developed as whole community organisations suffered from difficulties with some of the households not contributing to the schemes but expecting support. These groups are seen as important, as participants feel it is better to work together to support each other and that this also assists with being able to afford bigger expenses and helps people to plan for unforeseen events. The vast majority of participants in these groups are women (~80%).

The Venn diagram below indicates the importance of organisations to the community (those closest to the middle) as well as their relationships. The orange dotted lines in the diagram below depict strong and good relationships and the blue lines depict neutral relationships where organisations are aware of each other but do not proactively interact.

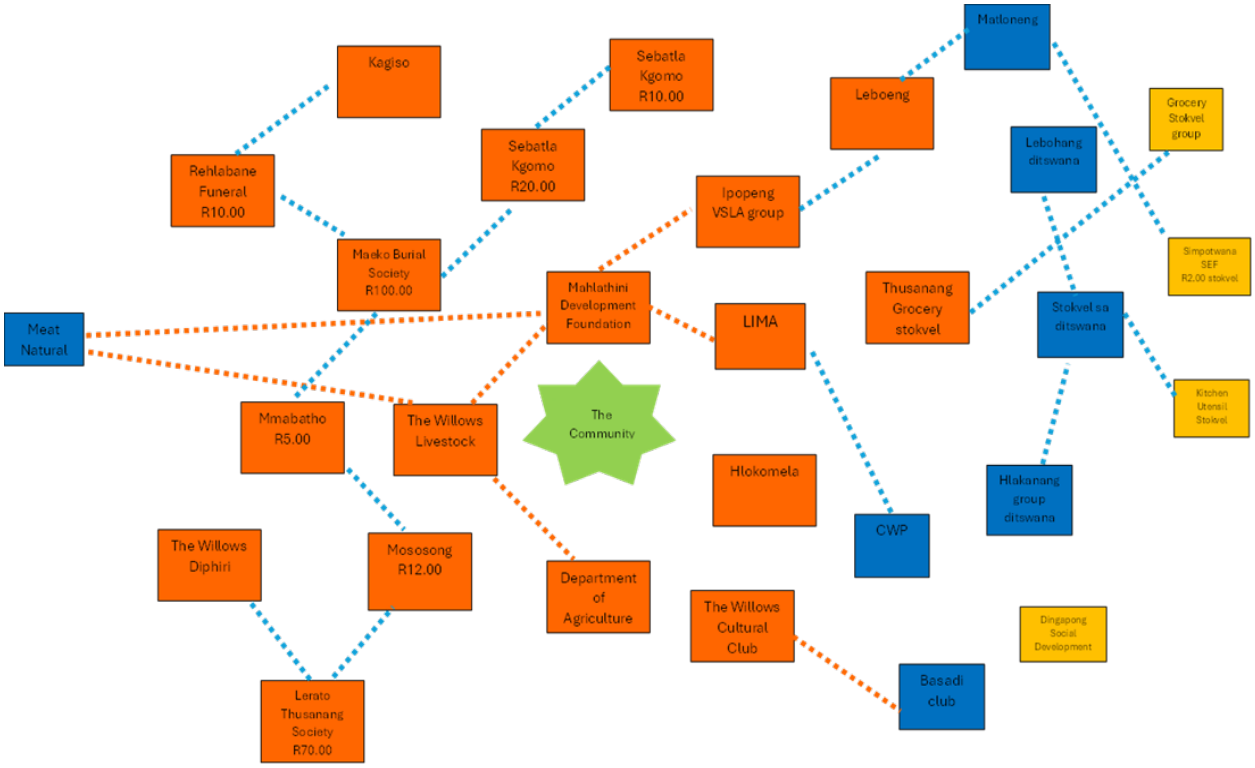


Figure 7: Venn diagram of importance of organisations and relationships between them for the Willows community in Limpopo. July 2024

From the Venn diagram one can note that the community find support from external organisations both NGOS and the Department of Agriculture to be very important (Larger orange cards) and that they deem their relationships to be good. They more often than not rely on the NGOs to bring the government Departments, including Agriculture, but also health, social welfare, roads, water service authorities and education closer to them. In this village the groups formed for supporting funerals and local ceremonies are also seen as very important. These groups know about each other but do not pro-actively collaborate. The local stokvels and savings groups are not considered that important (smaller blue and yellow cards). Again, the groups are aware of each other but do not interact.

When asked what they have learnt and how things have changed through being involved in local organisations farmers made the following comments:

- The groups have been very helpful. Burial groups started in the community, and everyone had to contribute when there was a funeral, but people were not all participating knowing that they would be assisted regardless. Now there are smaller groups where only those who are prepared to or can contribute and benefit from the support. Funerals happen almost every week and are very expensive, so taking part allows one the peace of mind that you will bury your loved one with dignity.
- The MDF learning group has helped small scale farmers who were active but with low yields. It also has helped poor households change their livelihood, by having a small back yard garden and making an income from it to provide for their families.
- They have started small business by being part of the savings groups. Savings groups have also decreased their debt from loan sharks. They are able to loan money and buy agricultural inputs and households essentials, start-up small businesses and pay for their children's college fees.
- Working together as a community has helped a lot of people have things they have in their households even in the state where they depend on social grants and selling vegetables from their gardens.
- Learning groups of farmers have taught them more on how to feed their families in these states of high employment and make an income. This alone has improved their livelihood because some are now able to farm in big fields and employ people to work.

With regards to how organisations have assisted the community to adapt to climate change the villagers (Sedawa and Willows) made the following comments:

- MDF has helped with a lot of things, starting with managing the water they have, use of grey water and harvesting rainwater. They have stopped burning of organic matter but instead use this material for mulching and in the deep trench beds to improve soil fertility and reduce evaporation. They no longer pay for tractors to plough, instead using conservation agriculture when planting field crops.
- They used to do mostly dryland cropping, but this practise was becoming very difficult due to lack of rain and changing weather patterns, with many crop failures and low yields. Now they know how to collect water from far to use for both consumption and irrigation in their household gardens. They would not have thought of doing this if they were working on their own.
- They know how to control soil and water movement in their households and outside their yards.

- They have lessened conflicts in the community. An example are the smaller groups of community burial societies, which reduces conflict and also assists the community as there are a high number of deaths
- The MDF learning group has helped them adapt to climate change. They have been active in farming for years, and some use borehole water in their homesteads for irrigation. They have been struggling with pests and diseases in their farming activities and also suffered a decrease in productivity, but through the Climate Resilient Agricultural trainings and support they are able to make organic sprays for both pests and disease control, they know the importance of improving soil health and protecting the soil from extreme heat. They also use tunnels that help protect their crops from the extreme climate and pests.
- They have learnt how to grow fodder for their livestock and save that for winter when there is little grass and a lot of burning happening in the villages.
- They have also learnt the importance of farmers networks and working together with both livestock and crop farming.

The table below outlines the participation of community members in different internal and external organisations and groups. It highlights the greater participation of women when compared to men and youth. It also highlights that a reasonably large proportion of inhabitants in these villages do not belong to any groups or organisations.

Table 8: Participation in internal and external organisations for community members in Willows, Limpopo. June 2024

Village	Organisation	Type	No in village	No of participants	Men	Women	Youth	Internal	External	Importance (Scale 1-3)
Willows	**Farming**	Livestock committee DoA)	1	200	200			1	1	3
No of community members ~ 800		CRA learning group (MDF)	1	69	10	53	6	1	1	3
		Meat naturally-auctions	1	100	80	20			1	2
		LIMA RDF (food security)	1	26	7	2	17		1	3
	Funeral suport	Funeral groups	8	200	28	172		1		3
	Savings	Stokvels	10	141	7	134		1		2
		VSLAs (MDF)	2	37	3	30		1	1	3
		Clubs (farming and saving)	1	24		24		1		3
	Community Development	Primary health care (Hlokomela)	2	7	1	2	4	1		2
	NGOs	Climate and food security	3	**132**	**13**	**85**	**23**		1	3
	Govt Deprtments	CWP and DoA	2	200					1	3
	TA	Land and conflict resolution	1	800					1	2
	Municipal council	Services, poverty	1	800					1	2

In summary, the complexity of local and self-organisation in the villages is quite low and restricted to socially important aspects of funerals, ceremonies and saving for household needs. Connections, both

local and cross-scale are generally made through linkages with external organisations who focus on this aspect- invariably certain NGOs. In these villages, where the CRA learning groups have been active, participants implemented a range of farming, as well as water and resource management activities that have made a huge difference for them. Many can now have food on the table and make a modest living from farming and small business activities – which they have found to be crucial in the present economic downturn and lack of employment opportunities. However, some of the climate change impacts mentioned such as destruction of houses, roads and infrastructure (such as electricity), increased poverty, crime and impacts on human health could, to date, not be coherently tackled by the communities. There is little to no institutional support for these aspects. Youth are considered disinterested in contributing to village life often waiting for better opportunities rather than getting involved in household food production.

B. Bergville, KwaZulu -Natal case study

This area falls within the upper uThukela river basin in the Northern Drakensberg. It falls within the cool sub-tropical sub-humid, montane and alpine grassland zones, with average annual temperatures of around 15 ºC, with good summer rainfall (650-1300mm/annum) and cold dry winters. Rainfall variability has increased significantly in the last 10 years as has temperature and heatwaves. Occurrence of extreme weather patterns wind, hail and storms has also increased significantly in the region.

A key vulnerability identified for the region is that of the potential for increasing food insecurity under changing climatic conditions, with very high levels of unemployment and poverty. Over-utilisation of natural resources combined with a lack of management of these resources has led to erosion and reduction of water availability, leading to water stress in these villages. In addition, between 70-80% of inhabitants are entirely reliant on social grants (child grants and pensions) for their incomes. Thus, pressure on existing natural resources to fulfil basic needs (grazing for livestock, firewood, plants for food and medicine and water) is likely to continue and intensify. Not only are poor land-use practices impacting production and ecological health and integrity, but these impacts are greatly exacerbated under hotter and more erratic rainfall conditions that are predicted for the region.

Climate change impacts of increased variability in rainfall patterns (late onset of rain, storms, and hail) with increased heat and reduced rainfall, with associated decrease in water availability, increased erosion and alien vegetation, decrease in grazing quantity and quality linked to damage to houses and infrastructure such as road and electricity, were strongly perceived by community members in this region. The negative impact on participants' livelihoods and the social fabric of their communities has also been emphasised.

Mahlathini Development Foundation has been implementing a systemic approach to climate change adaptation and climate resilient agriculture in partnership with the Maize Trust for conservation agriculture and SAEON/EFTEON, UKZN-CWRR, the INR, WWF and the Wildtrust for water and resources stewardship processes for around 8-10 years, across 5-18 villages in the area. Close cooperation and sharing of information and learnings with other stakeholders through a strategic water source area partnership called the Northern Drakensberg Collaborative has been important throughout the implementation processes. Other major stakeholders in the upper uThukela region have included SANBI and the WRC, among others. Close collaboration also with the local authorities – traditional Councils, Ward councillors and the Local Municipality as well as the KZNDARD has been a hallmark of work in this area.

Work has more recently been undertaken in 5 villages, with around 150 smallholder farmers. The case study focused on 4 villages (Vimbukhalo, Stulwane, Ezibomvini and Eqeleni), with 20 individual snapshot interviews conducted and three participatory impact assessment (PIA) sessions in Stulwane (35 participants), Eqeleni and Ezibomvini (25 participants) respectively.

The focus group discussions explored the different organisations at village level, their relationships, importance to community members and their functions. In addition, they provided a focus for outlining the learnings and changes people have been making, to provide a qualitative view on adaptive capacity and improved resilience. The table below summarizes the different categories and numbers of both internal and external organisations present in their villages.

Table 9: Number and categories of internal and external organisations in Bergville, KZN, June 2024

Organisational clusters (Bergville, KZN)				
	Stulwane (35)	**Eqeleni (12)**	**Ezibomvini (16)**	
Farming, livestock				
Internal	5 (poultry and livestock association, stock theft association, Firewood cutting and sale group, CA work group)	3 (Livestock association and stock theft group and agricultural cooperative)	4 (Marketing group, livestock association, stock theft association and agric coop)	DoA supports with livestock, dipping and vaccinations. In the past assisted with field cropping but COVID and climate change has stopped this. MDF is important in the villages. FSG has supported with biochar experiments, some fencing, and limited fencing and marketing support. Agricultural cooperatives were formed in 2016, but have not been active due to lack of support from DoA) CRA learning groups: Ezibomvini (52), Stulwane (30),
External	2 (MDF, DoA)	2(MDF, Farmer Support Group-FSG, DoA)	2 (MDF, FSG, DoA)	
Water and natural resource management				
Internal	4 (Water committee, resource management committee, craft group, community burial forest)	1(River cleaning group)	2Water and resource management committees)	Committees look after the 2 self-supply water schemes (94 households) in Stulwane and 1 scheme in Ezibomvini (11hhs), undertake grazing management, alien clearing, and erosion control activities MDF supports the Climate resilient agriculture learning groups, to which other committees are linked.
External	1 (MDF)	1 (MDF)	1 MDF)	
Community engagement, social				
Internal	3 (soccer, hunting group)	3(youth group, hailstorm group, men's group)	2 (youth group, hailstorm group)	Cultural clubs, sport, hunting, prayer groups, traditional ceremonies)
External				
		Church		
Internal	1	2	4	
		Savings		
Internal	5	3	4	Stokvels are a traditional practise and are common in the villages. In Bergville the stokvels are arranged according to purpose e.g. firewood, building, Christmas, food and funerals The VSLAs are seen to differ as here people can save for productive activities and small businesses
External	2 (MDF- VSLA and BLF-bulk loan fund)	3 (MDF)	4(MDF VSLAs incl new youth group)	

Health				
External	Dept of Health – Mobile clinic			

Mahlathini Development Foundation was considered very important in all three villages, as the only organsiation that has consistently supported smallholder farmers and villagers to adapt to climate change and find avenues for improved livelihoods despite difficult environmental and economic conditions. The table below outlines the analysis of climate change impacts by community members and their adaptive strategies.

Table 10: Climate change impacts with strategies and actions undertaken and thoughts of Bergville community. June 2024

Natural			
CC Impact	**Solutions Tried**	**Facilitated by MDF (*)**	**Solutions Thought Of**
↓Rain	-Clearing alien trees and Greywater use -Avoiding veld fires -Trench beds and drip irrigation -Micro-tunnels and mixed cropping -Mulching, No-till, cover crops -Rainwater harvesting	* * * * * *	
↓Access to water	-Locally led water access -spring protection, pipes, taps	*	
↓Grazing lands (grasses)	-Stopped veld fires -Make fire belts/breaks		-Rotational grazing * -Herding of livestock and fencing of fields and gardens to avoid conflicts of crops being eaten by livestock.
↑Heat	-Cover crops and tunnels	*	-Reduced burning of veld and waster to reduce emissions -Promoting recycling
↑Floods	-		
↑Soil Erosion	-Herding livestock and interchanging grazing points -Stone and brush packing	* *	
↑Winds	-Ukuteta ikhomani (traditional method where a woman puts a calabash on her back like a baby, it is believed to calm heavy winds)		-Planting of trees and fruit for wind protection
↑Alien vegetation	-Alien clearing	*	
↑Hailstorms	-Ukuzila inhlabathi (traditional method of stopping using the soil for that particular period)		
↓**H**ouses	-Water channelling using gutters and V-drains -Cutting grass around the houses to prevent catching fire during windy seasons		-Building stronger houses (using cement/concrete) -Diversion furrows
↓Roads and bridges	-Stone packs -Diversion furrows -Cleaning of Blockage in pipes	* *	-Digging furrows for water drainage next to the roads
↑**C**ar accidents	-Speed humps		-Reducing speed
↑Falling of trees (along the road/next to houses)			-Cut trees that look cracked near the roads

↑**D**iseases and increased mortality	-Ukuchatha -Use traditional herbs and medications		-Eating healthy foods - more organic and traditional food * -Regular clinic check-ups
↑Hunger/Poverty	-Climate resilient agriculture: CA, livestock integration, intensive homestead gardening, poultry (borilers, layers, Boschvelders)	*	-Workshops to learn about financial management -Diversification of enterprises
↑Crime	-Not buying stolen goods -Selling livestock		-Spreading awareness and consequences of crime to children
↑Drug abuse			-Educating children about consequences of drug abuse.
↑Divorces			
Farming inputs (Need more as fertilisers get washed away by rains)	-Micro dosing of fertilizer	*	
↑Prices	-Farm larger area with diversity of crops	*	
↑Infrastructure costs (re-building costs)	-Applying for government assistance		
↓**J**obs	-Farming for selling	*	-Venture into other business enterprises

This table provides a good overview of the CC impacts in the region and of activities undertaken or thought of at community level to mitigate against these impacts. It also shows that communities are experiencing very high levels of shocks and stressors related to climate change. The more integrated approach used by MDF with the learning groups has helped to provide answers and action in quite a number of these categories. Community members have commented on the range of new activities now undertaken including Conservation Agriculture, taking care of the environment and natural resources, poultry production as a business, saving water, taking care of water sources and working together. They have gained knowledge and skills to be self-sustainable through new methods and approaches to farming (including fodder production and planting of cover crops), support for access to inputs, business development skills, saving and support in marketing as well as access to water closer to their homes. The mentioned repeatedly that they are now a lot more self-sustainable than before and that their livelihoods have improved considerably.

These interventions have led to a number of groups and committees that have formed as a result, including for example water committees, resource management committees and marketing groups. More recently youth groups have formed, and youth have also set up their own village savings and loan associations.

The Department of Agriculture is seen as important and has in the past provided support with ploughing, seed and seedlings as well as training in value addition and livestock management. Presently support is restricted to dipping and support for the livestock associations. They were rated as a 2 on a scale of 1-5 in increasing importance due to the low level of service presently provided.

The Traditional Authorities and Ward committees (councillors) in this region do provide some support in Land allocation, community conflicts, planting and harvesting times and in RDP housing respectively, but generally do not have meetings with the community and provide little ongoing support or services. Ward councillors in particular have little respect in the community and are seen to only be interested in community affairs when elections are looming.

The stokvels, funeral groups and church groups are important internal organisations for maintaining the fabric of the society and allowing householders to function in a cash deficit environment.

In general, the lack of government and institutional engagement in infrastructure and service delivery support is notable, as is the 'dis-engagement' of both the Traditional Councils and the Local Municipality in the development needs and processes of these communities.

When asked what they have learnt and how things have changed through being involved in local organisations farmers made the following comments:

- We have learnt many new practices and approaches in farming and looking after our environment. For example, we have learnt how to save water in our farming and the importance of planting cover crops. We have learnt about
  - soil maintenance- soil cover, intercropping, crop rotation, run-off, crop mixing.
  - Poultry both meat and egg production as well as multipurpose breeds.
  - Building micro-tunnels, now able to see improvement of crops inside the tunnel compared to outside.
  - Trench beds which have a lot of organic matter and produce very good crops
  - Water saving through drip irrigation and using greywater
  - Hay baler making, making our own protein blocks, planting winter and summer crops and supplements have helped our livestock
  - Alien trees and bushes are the invading space for indigenous plants and finish the grazing land, and water. There is improvement when these are removed.
  - Closing dongas, land rehabilitation and reducing runoff and
  - Cleaning our environment to protect our land from pollution
- We have learnt how to work together as groups which has made many things possible that we couldn't do before- such as running our own water access schemes, improving our grazing lands and doing firebreaks, negotiating with our Traditional Council and ward councillors. The savings groups work together for improving livelihoods
- We have improved our financial status through saving money and specifically saving for farming inputs which has allowed us to continue farming despite the very difficult conditions. In our neighbouring villages most people have stopped farming, but we have even expanded. We have also learnt how to do farming for/as a business and have improved our business skills. Before we were planting only for food.
- We have learnt about marketing, including advertising our production, pricing, working out profits and have also included food exchange as a way to work with our produce.
- We have learnt about livestock integration and now can provide feed and supplementation during winter to allow our livestock to survive. We have learnt about better medications and management of our livestock. We now have healthy-looking well-fed livestock.
- We have learnt about spring protection to stop contamination and make water available for both households and livestock and have learnt to look after our streams to improve the quality and quantity of water.

With regards to how organisations have assisted the community to adapt to climate change the villagers (Stulwane, Eqeleni and Ezibomvini) made the following comments:

- The farming practices that we have learnt and our now using has improved our production and the quality of our produce while most other community members have stopped farming all together. We now have enough food and can even at times sell some surplus produce.

- We have learnt how our actions have increased the lack of water availability in our landscape and are now implementing practices to ensure better management of our veld and water including for example alien clearing, spring protection, firebreaks, control of livestock movement and winter feeding of cattle.
- By working together, we can deal with some of the negative impacts of increased storms and flooding. We assist those farmers and households which were impacted, rather than just leaving them to cope by themselves. We fix our roads and bridges and do not wait for someone to come and help us.

The table below outlines the participation of community members in different internal and external organisations and groups. It highlights the greater participation of women when compared to men and youth.

Table 11: Participation of community members in local organisations for the Stulwane village in Emmaus, Bergville. June 2024

KZN: Bergville	Stulwane village	No of community members `400					
Organisation Type	**Organisation Name**	**No of People**	**Men**	**Women**	**Youth**	**Internal/ external**	**Importance (Scale 1-3)**
Agriculture	Mahlathini Development Foundation	30	3	24	3	External	3
	Poultry Group	10	3	6	1	internal	3
	Livestock Farmers association	150	145	5	0	internal	3
	Agricultural extension	20	3	17	0	external	3
Governance	Ward Council meetings	400	100	250	150	external	1
	Stock Theft Association	50	35	15	0	internal	3
Economic	Poultry Group	10	3	6	1		3
	VSLA	30	0	18	12	External	3
	Small Entrepreneurs (grass matts)	14	0	14	0	internal	1
Religious, Social & Infrascture	Soccer team	32	0	0	32	internal	1
	Beverages Stokvel Group	19	19	0	0	internal	2
	Firewood stokvel	50	0	50	0	internal	2
	Church	8	1	7	0	Internal	2
	Amanqina (Hunting group)	60	45	0	15	internal	2
	Funeral stokvel- umdiklizo	170	0	140	30	internal	2
	Grocery stokvel + Christmas Stokvel	90	0	60	30	internal	2
	Ukutina (group that helps each other make blocks for house building)	13	0	13	0	internal	2
Water & Natural Resources	Water Committees	30	10	20	0	internal	3
	Grazing Land Management	30	24	6	0	internal	2
	Alien species Cutting	20	5	12	3	internal	2
Health	Department of Health (local mobile clinic)	400+	+-100	200+-	-+200	External	3

Note: Blocks marked in green are those community members that interact directly with MDF.

In summary, the complexity of local and self-organisation in the villages is quite low and restricted to socially important aspects of funerals, ceremonies and saving for household needs. Connections, both local and cross-scale are generally made through linkages with external organisations who focus on this aspect- invariably certain NGOs. In these villages, where the CRA learning groups have been active, participants implemented a range of farming, as well as water and resource management activities that have made a huge difference for them. Many can now have food on the table and make a modest

living from farming and small business activities – which they have found to be crucial in the present economic downturn and lack of employment opportunities. However, some of the climate change impacts mentioned such as destruction of houses, roads and infrastructure (such as electricity), increased poverty, crime and impacts on human health could, to date, not be coherently tackled by the communities. There is little to no institutional support for these aspects. Youth are in these villages have started to become involved in the activities, an aspect that was also supported through the provision of stipends to eco-champs. These youth learnt a lot about their environment and management options through this process and also provided a service in their communities that was valued by their elders, enabling them to integrate a lot better into the learning groups and activities undertaken.

3.5 Development of a monitoring and evaluation platform and dashboard

This aspect is part of the development and refinement of the overall MERL process for measuring and reporting climate resilience for community level engagements in adaptation. The intention is that this tool can be available to all stakeholders involved in this field upon completion and will form part of the MERL handbook that is being developed as well.

The intention of this tool is also that it is interactive and will have the capability built in to compare data from different sites and regions.

The framework of using absorptive, adaptive and transformative capacities has been used to group, analyse and visualise data.

Below, the recent snapshot interviews (n=20) undertaken in Matatiele, Eastern Cape will be used as an example.

C. Matatiele, Eastern Cape case study

This area falls within the Umzimvubu catchment of the Southern Drakensberg, bordering on Lesotho. It falls within the cool sub-tropical semi-arid agroecological zone, with average annual temperatures of around 17°C, with summer rainfall averaging ~600mm and cold dry winters, with potential for snow. Rainfall variability has increased significantly in the last 10 years as has occurrence of extreme weather patterns wind, hail and storms.

A key vulnerability identified for the region is that of the potential for increasing food insecurity under changing climatic conditions, with very high levels of unemployment and poverty. Over-utilisation of natural resources combined with a lack of management of these resources has led to erosion and reduction of water availability, leading to water stress in these villages. In addition, between 70-80% of inhabitants are entirely reliant on social grants (child grants and pensions) for their incomes. Thus, pressure on existing natural resources to fulfil basic needs (grazing for livestock, firewood, plants for food and medicine and water) is likely to continue and intensify. Not only are poor land-use practices impacting production and ecological health and integrity, but these impacts are greatly exacerbated under hotter and more erratic rainfall conditions that are predicted for the region.

Climate change impacts of increased variability in rainfall patterns (late onset of rain, storms, and hail) with increased heat and reduced rainfall, with associated decrease in water availability, increased erosion and alien vegetation, decrease in grazing quantity and quality linked to damage to houses and infrastructure such as road and electricity, were strongly perceived by community members in this region. The negative impact on participants' livelihoods and the social fabric of their communities has also been emphasised.

Mahlathini Development Foundation has been implementing a systemic approach to climate change adaptation and climate resilient agriculture in partnership with Environmental and rural Solutions (ERS), SaveAct and Lima-Rural Development Foundation also working in the region.

The dashboard- LANDING PAGE

The first dashboard is the Landing page, which includes a map, overall description of the area and basic demographics of the community or communities in question.

For Matatiele (n=20) the gender of respondents to the snapshots were 71% women and 29% men and the age group categories are as shown in the figure below with 5,9% between the ages of 18-35yrs, 35,3% between the ages of 36-50yrs, 52,9 %between the ages of 51-65yrs and 5,9% over the age of 65 yrs. These two small graphs are considered representative of the target group in Matatiele, showing beneficiaries as primarily women and between the ages of 51-65 years of age, with a slightly smaller beneficiary grouping between the ages of 35-50 years. This indicates that participates are no longer dominated by retirees, which is typical of these communities but working age unemployed people farming to make a living. Included in these two target groups is what we have coined as the 'missing middle' which is a sub-category of people who do not receive any social grants - as their children are grown-up, but they are still too young to receive pensions. This group has in recent years been shown to be the most vulnerable, but also the most active grouping in these communities.

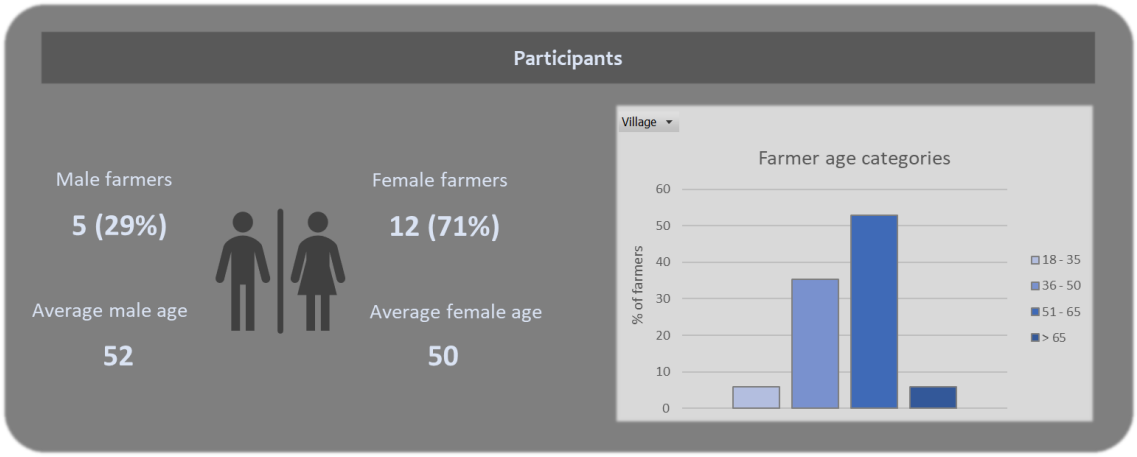


Figure 8: Gender and age distribution for resilience snapshot respondents in Matatiele, June 2024

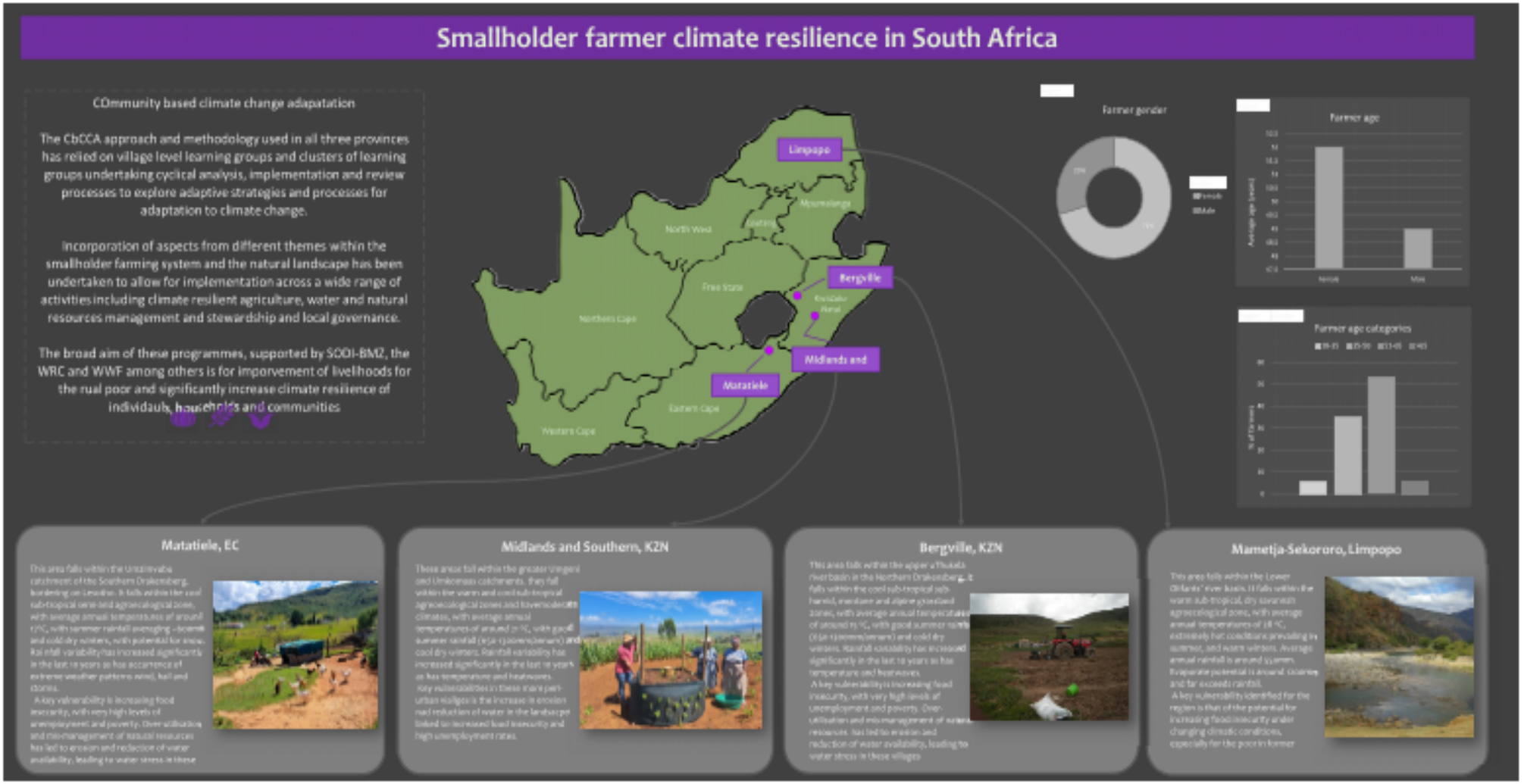


Figure 9: The Landing page in the dashboard visualization tool for smallholder farmer climate resilience in South Africa

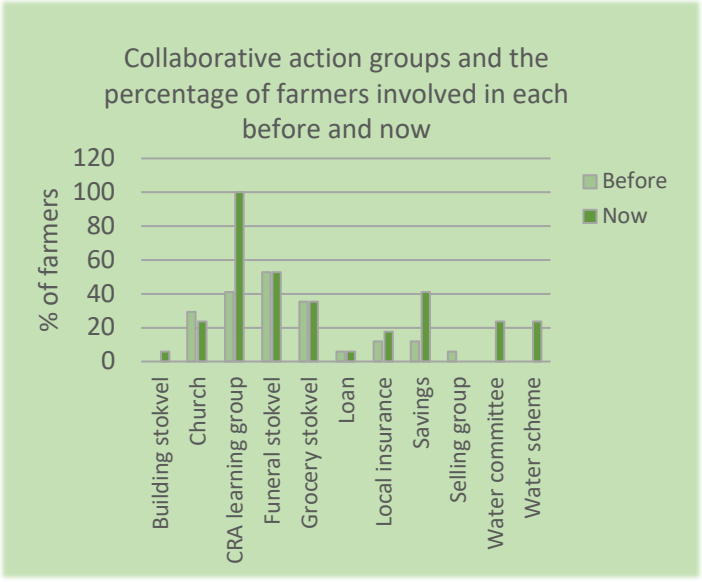
The dashboard_ ABSORPTIVE and ADAPTIVE CAPACITY

These dashboards focus on indicators that provide an indication of change in a number of facets and has the following resilience indicators and information sets.

Resilience indicator	Datasets
Socially self-organised	- Increased participation in collaborative action/ social agency groups - Average number of new groups that individuals belong to
Shared learning	- Increased diversity of knowledge-sharing mechanisms -Increase number of information sources
Ecologically self-regulated	- Improved water use efficiency - Improved soil health
Honours legacy	- Traditional practices (number in use per participant)
Builds human capital	- Use of savings - Use of loans
Reasonably profitable	- Increase in income - Increase in savings - Increase in size of farming activities
Diversity and redundancy	- Increase in income sources - Increase in number of farming activities (gardening, field cropping, livestock, trees and natural resources) - Increased crop diversity - Water sources and reliability - Number of sources for nutrient, suppliers and sales outlets
Spatial and temporal heterogeneity	- Increased growing season - Crop rotation/mixed cropping - Livestock integration

The results for these indicator sets for Matatiele are shown below:

SOCIALLY-SELF ORGANISED



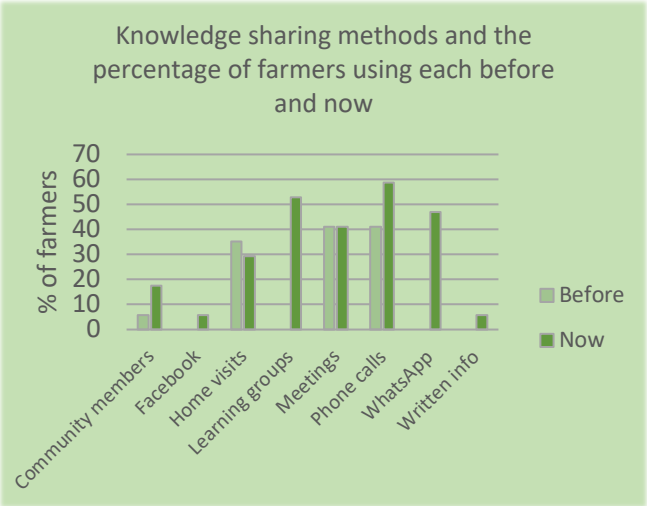
Average number of new group types per farmer

Matatiele: **1**

Figure 10:Above left and right: Shows the different groups farmers belong to and the number of new groups on average which each individual has joined since undertaking climate resilient agriculture (CRA).

From the graph above the changes in social organisation are primarily belonging to the CRA learning group, initiating new savings groups, setting up a building stokvel as well as the water committees and water scheme participation. It indicates that participants now belong to different categories of groups and ones that have as a focus agricultural and environmental concerns in the area.

SHARED LEARNING



For this indicator respondents were asked about how they learn and share knowledge and how this was done before their involvement in CRA and now. The figure below outlines these sharing mechanisms. From the graph it can be seen that there has been an increase in sharing between community members, participation in the learning group and significantly a significant increase in using cell phones, 'Whatsapp' and written information in recent years. On average participants used 3 information sources in the past and now are making use of 6 different sources. This provides evidence of greater interconnectivity between community members and with the broader environment which is a strong building block towards the use of more digital platforms for information and knowledge sharing.

ECOLOGICALLY SELF REGULATED

This indicator encompasses concepts of ecological integrity, eco-systems services and functionality of ecosystems. It is difficult to assess directly, given that these smallholder communities live in areas where ecological functioning is already compromised through overuse and erosion.

Practices that improve water and soil management were taken as proxies for self-regulation and the percentage of farmers using each of these practices was measured, as shown in the graph below

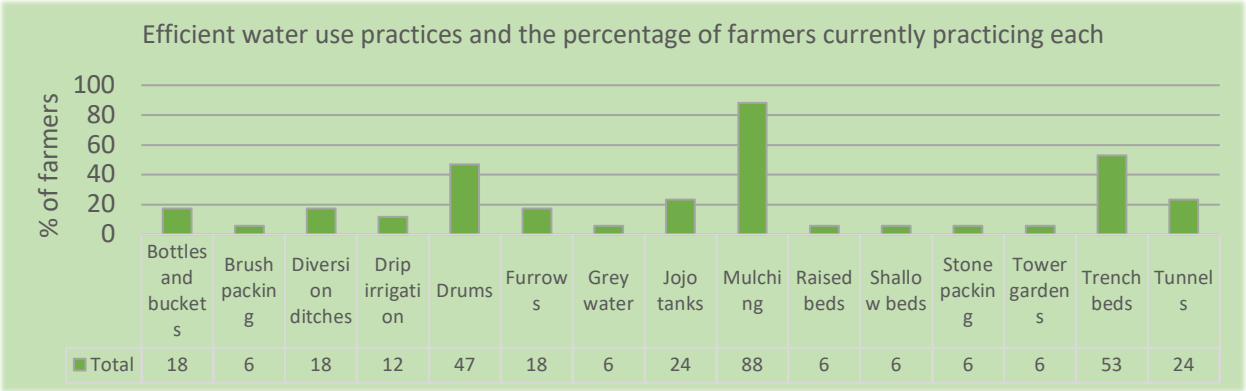


Figure 11: Percentage of farmers using different water use efficiency practices.

Water use efficiency

Average number of efficient water- use practices per farmer: **4**

By far the largest proportion of participants were using mulching (88%), trench beds (53%), rainwater harvesting drums (47%), Jo-Jo tanks (24%) and micro-tunnels (24%) in their homestead gardens to improve water use. The use of greywater and tower gardens was quite low (6%). Erosion control measures included furrows and diversion ditches (18%), stone packing and brush-packing (6%)- mostly also in and around the homesteads. These practices combined with soil improvement (organic matter and soil health), as well as crop diversification, mixed cropping and integrated pest and weed management provide a suite of practices building self-regulation in the homestead farming system. To explore this one of the

questions asked were the participants assessment of the improvement of their soil health in their production system.

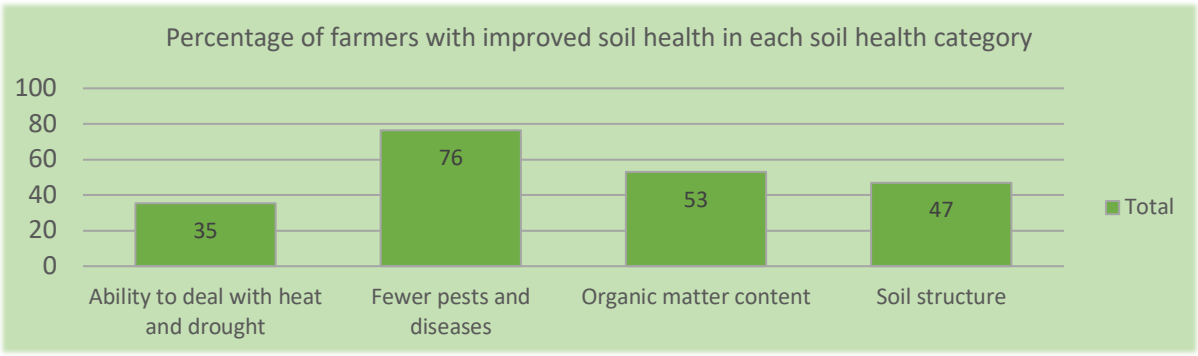


Figure 12: Percentage of farmers who have noticed an improvement in their soil health functions.

From the graph above around 75% of farmers have noticed a reduction in pests and diseases since implementation of the CRA system in their gardens and fields, 53% of farmers have noticed an improvement in the organic matter content of their soil, 47% have seen an improvement in soil structure (less compaction and increased friability of soil) and 35% have noticed an improved ability of the soil to deal with heat and drought (reduced wilting and heat stress in crops).

A number of aspects were looked at in terms of production, productivity, diversity and livelihood options. Smallholder farmers work within a mixed farming system of gardening, field cropping, livestock production and production of trees and multi-purpose species. Not all farmers undertake all these activities. An assessment of the number of farmers who increased their activities, as well as the seasonality of these activities was undertaken. Examples for increased seasonality include planting vegetables in both winter and summer, increasing field cropping by planting winter or cover crops going into autumn, changing small livestock practices and breeds to be able to do poultry husbandry also in winter

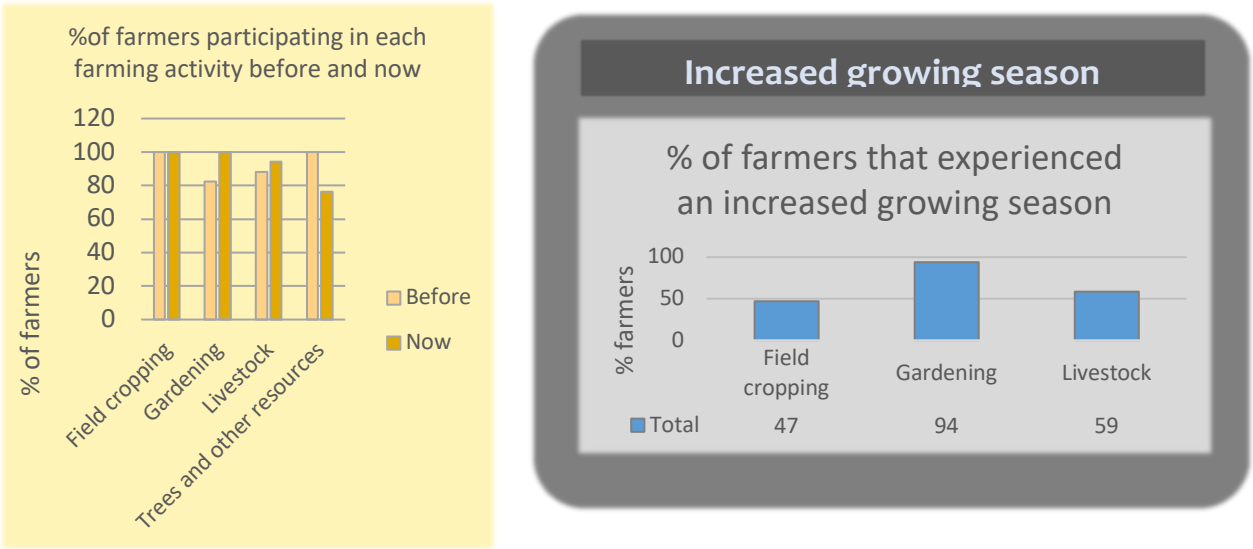


Figure 13: Percentage of farmers who increased their farming activities and also increased their growing season for different farming activities.

From the graphs it can be seen that involvement in gardening and livestock husbandry has increased, field cropping has remained constant and tree production has decreased. 18% of farmers have

increased their farming activities. Most of the farmer (94%) increased their growing season in their gardens (winter and summer production), 59% increased the season for livestock production (mostly through better housing and introduction of multipurpose breeds of poultry) and 47% increased their field cropping growing season (through production of winter cover crops).

Mixed cropping and crop rotation were also introduced to farmers. These practices increased from 29-59% for field cropping and 88% of farmers introduced these practices in their gardens.

Farmers were then asked about the range of livelihoods activities (income generation activities) they have access to. The intention was to get some indication of the contribution of farming to their livelihoods. The graphs are shown below

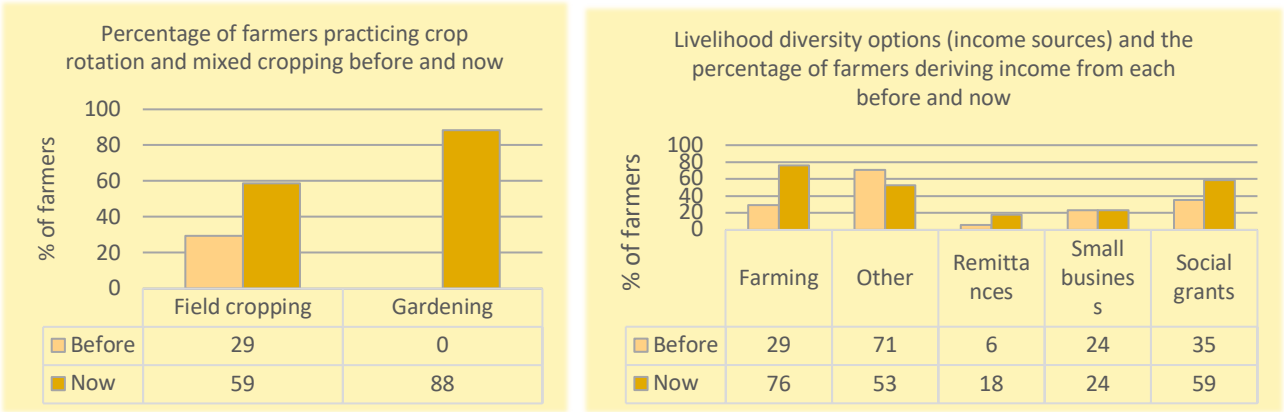
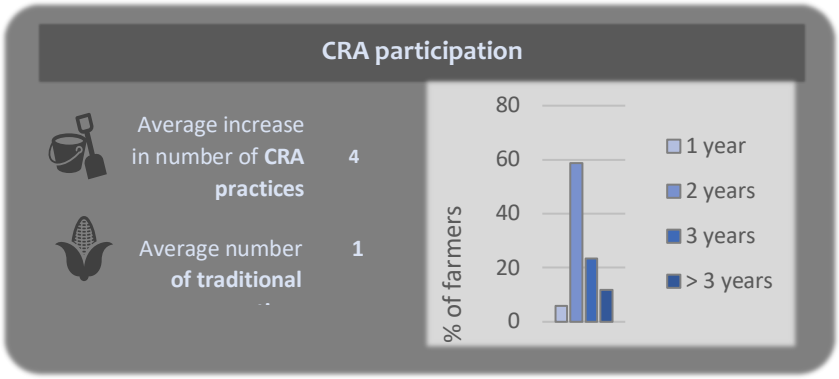


Figure 14: Above left: Percentage of farmers using crop rotation and mixed cropping and above right, the percentage of farmers who have access to different livelihood options.

Categories for incomes have shifted in the last 4-5 years and many more people are relying on farming to provide a livelihood (from 29-76%). This is other options (usually day labour or part-time employment programmes) have decreased. Mostly formal employment opportunities in the cities and other regions has decreased dramatically since the COVID pandemic. These figures point towards the possibility that practicing CRA is making farming a viable option for these households, reducing migration for employment.

The CRA practices implemented by farmers were also assessed. These would include practices related to soil, water, plant production and livestock integration. Examples of practices mentioned by farmers were: trench beds, mixed cropping, crop rotation, rain water harvesting, drip kits, grey water, mulching, planting of herbs, Conservation Agriculture, use of compost and manure, shallow trenches, poultry housing, micro tunnels, liquid manure, foliar spray, natural pest control, diversion ditches and furrows & ridges. Average increase in the number of CRA practices per farmer in the last three years has been 4 practices, as shown in the figure alongside.



The tree diagram below shows the percentage of farmers that have undertaken the range of practices.

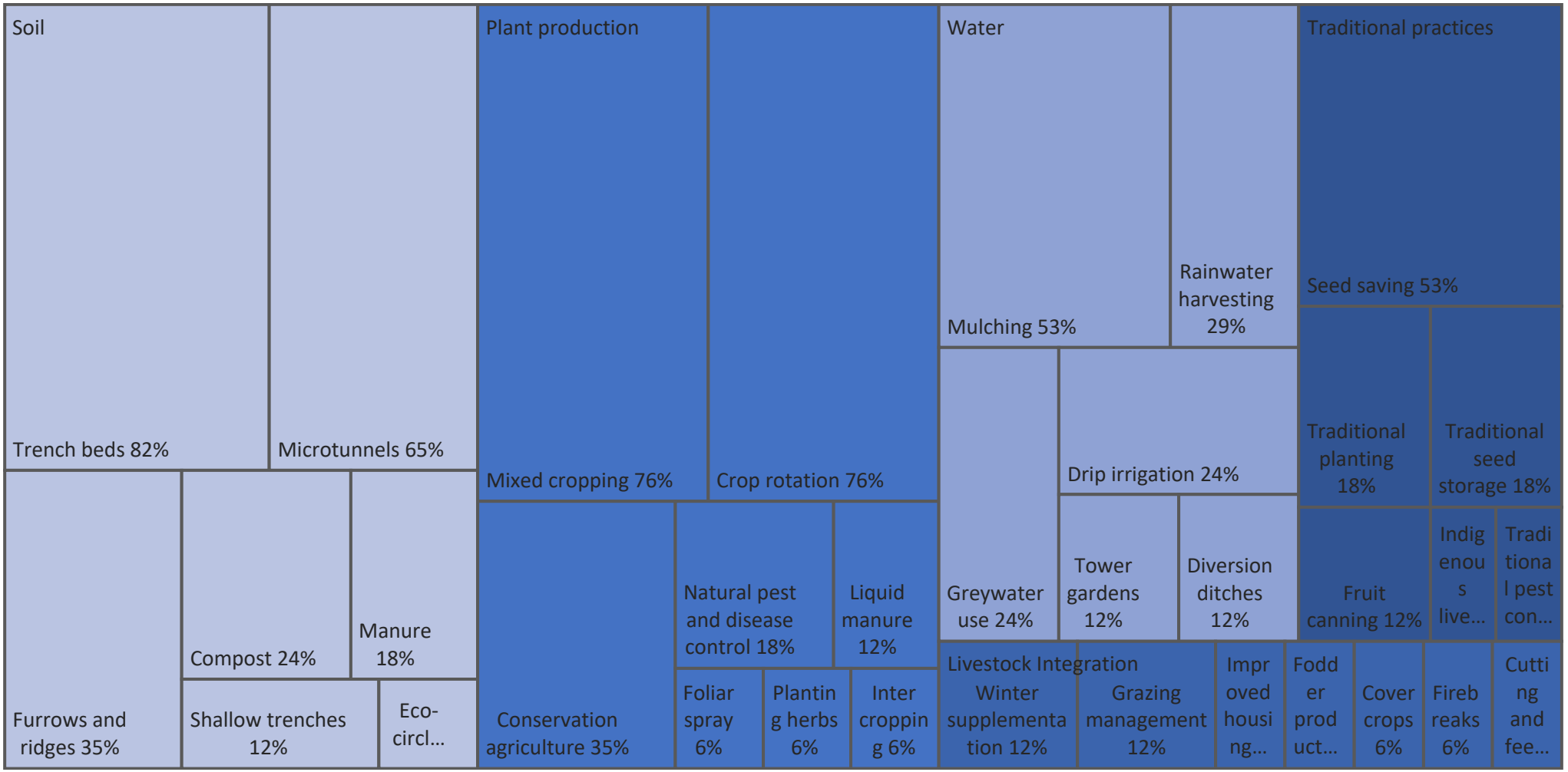


Figure 15:Percentage of farmers undertaking different CRA practices in Matatiele, June 2024

3.6 CONCLUSIONS

These case studies, although highly complex and detailed in nature clearly indicate the improved climate resilience of smallholder farming communities working within a community-based climate change adaptation framework, working to implement climate resilient agriculture practices across their mixed farming system and including water and resources stewardship and management into the portfolio of activities. This has also increased annual farmer incomes by roughly R16 000/annum, over and above providing for household food security. This is in a context where rural poverty has deepened substantially. This research has indicated that smallholder households not involved in coherent adaptation activities have experienced an average of a 40% reduction in incomes post-COVID. The process has also significantly increased human capacity, through improved knowledge and skills as well as local governance, leading to the concept of self-sustainability emerging in these villages.

These case studies provide a strong evidence base for the success of this approach and the urgent need for expanding the reach of these interventions to many more rural communities.

4. EXPLORATION OF FACTORS THAT CONTRIBUTE TOWARDS GREATER SUCCESS AND SUSTAINABILITY OF FARMING BUSINESS ENTERPRISES PARTICIPATING IN THE MAHLATHINI DEVELOPMENT FOUNDATION PROGRAMMES: A CASE STUDY

By Nqe Dlamini

ABSTRACT

Sustainable livelihoods, food security, climate sensitive farming, financial services for small-scale farmers and promotion of enterprise development interventions underpin strategic development interventions meant to address poverty, under-development and ecosystem challenges in Africa. Savings groups and farm-based microenterprises are being widely promoted as crucial steps toward economic empowerment, sustainable livelihoods and conservation restoration. This case study reports on factors that contribute towards greater success of farm-based enterprises that are operated by 18 participants in the Climate Resilient Agriculture (CRA) programme implemented by Mahlathini Development Foundation. The study concludes that focused savings groups that employ Village Savings and Loans Association (VSLA) methodology provide a springboard for participants to improve their incomes through starting and operating farm-based microenterprises and income generating activities. The study also concluded that participants also engage in non-farming income generating activities to supplement their farming incomes and better their livelihoods.

Key concepts: Sustainable livelihoods, resource-based view, resource-dependency theory

4.1 INTRODUCTION

This case study presents factors that contribute towards greater success of farm-based enterprises that are operated by small-scale farmers. Farm-based business enterprises play a significant role in most countries, and in particular in the African continent as they contribute immensely to food security and improved household incomes. A growing body of literature and practical experience demonstrates huge potential for small-scale farmers not only for income generation, but also for

advancing integrated rural development objectives and sustainable livelihood agenda (Maican et al., 2021; Adobor, 2020; Mubanga & Umar, 2020).

Farm-based microenterprises that are specifically operated by small-scale farmers are viewed as strategic accelerators for transitioning towards Climate Resilient Agricultural (CRA) practices. These microenterprises include survivalist enterprises that are not formally registered with government regulatory bodies. Challenges facing small-scale farmers are known and in the main include lack of access to production infrastructure, financial resources, extension services and sustainable markets. In response to these challenges, many farm-based microenterprises turn to informal financial services to support their production activities. Mahlathini Development Foundation (MDF) has given considerable attention to Village Savings and Loans Associations (VLSAs). This is because VSLAs promise to provide alternative finance for people and microenterprises that are unable to secure operating credit and other related financial services from the mainstream financial institutions such as Development Financial Institutions (DFIs) and commercial banks.

The study noted the complexity in defining business enterprises that are operated by small-scale farmers. There are three main reasons for this.

- First, the difference between a business enterprise and its owner-operator may be distorted. This is because the decisions and transactions that happen in a business enterprise tend to shift and favour consumption priorities of a household. In many instances, activities that sustain a household and business operations are mixed and treated as one.
- Second, the size and limited production resources may be perceived to box farm-based microenterprises into subsistent production which may not be the case.
- Third, a business enterprise is generally described as a unit of production and/or distribution for a specific market for the sole purpose of generating profit. This is the mainstream definition of a business enterprise. It is based on a premise of the owner's ability to recover cost of production and generate profit. However, microenterprises that are operated by small-scale farmers are too diverse and complex to be confined by profit-maximisation objectives. This complexity has been observed by Fairhead and Leach (2005) in Wale and Chipfupa (2021) who noted that African agriculture is completely embedded on diverse development priorities of rural people hence the misfit between mainstream characteristics of a business enterprise and what farm-based microenterprises do.

The study acknowledges the difficulty in understanding the characteristics and traits of the owners of farm-based microenterprises. This is because farm-based microenterprises operate in complex environments that demand owners to attend to competing and in some cases, conflicting priorities. Wale and Chipfupa (2021) argue that the analysis of a farm-based microenterprises should acknowledge attributes such as prioritising food for the household, mixing household and farm operations, using family labour and sometimes relying on indigenous knowledge systems. In many instances, they may not be too concerned with administrative duties such as record keeping.

The study also noted that farm-based microenterprises operate whether they are formally registered or not (Sharrif & Peou, 2008). Informed by this reality, this study critically explored factors that contribute towards greater success and sustainability of microenterprises that are operated by small-scale farmers that are supported by MDF. These factors were measured against the widely accepted assumptions and characteristics of a business enterprises. The significance of this study is that it can

benefit research institutions, development agencies, practitioners, policy makers, financiers and grant makers with regards to resourcing non-governmental organisations that support small-scale farmers, microenterprises and advancement of CRA agenda.

4.2 MAIN FEATURES OF A BUSINESS ENTERPRISE

So far, this article has made reference to farm-based microenterprises and their operators (owners). The purpose of this section is to identify main features and characteristics of a business enterprises. The main features were drawn from various researchers on the subject of Enterprise Development (ED). Four main features were found sufficient to describe creators and owners of business enterprises. Generally, creators and owners of business enterprises are referred to as entrepreneurs. An entrepreneur has an ability and skills to:

- create and operate a business activity where none existed before (Cunningham, 2014);
- align vision to willpower and resourcefulness, tolerate and rise above failures (Díaz-Pichardo et al., 2012), while at the same time learn and earn profit (Gartner, 2008);
- be visionary, identify a new income generating opportunity and take conscious decisions to act on it (Thompson, 2009), and use technical skills to produce, promote and distribute products and/or services (Gartner, 2008); and
- enjoy internal locus of control which includes independence and self-reliance (Karr et al., 2018).

Owners of business enterprises adopt certain indicators to measure the performance of their enterprises. Profitability of an enterprise is the most common indicator of measuring success (Mitton, 2009; Vesper, 2014). However, Liles (2014) observed that some entrepreneurs would still consider themselves successful if their business enterprises help them achieve personal autonomy even if they earn lower incomes than their peers in the employment. In addition, some researchers list business experience, business skills, technical skills, innovation, continuous education and training as critical success factors of a business enterprise (Rankhumise & Van Niekerk, 2010). The combination of these factors is important as they enable business owners to take informed decisions, manage cash flow, identify and mitigate risk, grow customer base and continuously afford to finance the operations of the business.

4.3 PROMOTION OF ENTERPRISE DEVELOPMENT IN SOUTH AFRICA

The purpose of this section is to present the South African historical context in relation to the enterprise development national agenda. Torppa (2006) shares a view that the promotion of microenterprises began in the 1970s as a response to a series of economic crises which affected national economies world-wide. Torppa (2006) further notes that in the 1970s policy makers and economist perceived microenterprises as quick job creators and disseminators of social benefits, and such enterprises were less enormous to establish and comparatively required modest resources.

In South Africa, small businesses are categorised into groups such as survivalist, micro, small and medium, hence the acronym SMME, which refers to small, medium and micro enterprises (National Small Business Amendment Act, 2004). Post the first inclusive democratic elections in 1994, the South African government focused on promoting and supporting the SMME programmes to foster inclusive economic participation that was hoped to bring about a more equitable distribution of wealth. Using its power, the government focused on policy changes and support interventions for survivalist, micro

and small enterprises that were dominated by previously disadvantaged black operators. This meant that all three spheres of government were responsible for creating enabling and regulatory environment were legislatively mandated to develop and support the SMME sector.

Informed by this legislative mandate, development of SMME sector policies, promotion of entrepreneurship, strengthening enabling environments and enhancing competitiveness were pillars of SMME support agenda. These pillars of support rested on core thrusts such as expanding access to finance; improving market opportunities; localising support and co-funding minimum business infrastructure facilities for targeted enterprises. The target enterprises included informal microenterprises which were specifically owned by previously disadvantaged individuals, women and youth.

However, despite noble intentions of the government, the majority of stakeholders in the SMME sector complained that the public sector support services were failing to benefit survivalist and microenterprises. The dominant perception is that survivalist and microenterprises tended to rely far more upon informal than upon formal sources of support. It appeared that this category of enterprises lost faith on government institutions in providing support services. Further to this, proxies that were used to define SMMEs were complicated to apply especially for survivalist and informal microenterprises operating in rural communities.

Drawing from the International Conference of Labour Statisticians (ICLS) and the International Labour Organisation (ILO), informal enterprises are mainly found in the informal economy and their economic activities are insufficiently covered by formal regulation (ILO, 2015; ICLS, 2018). In most basic terms, informal enterprises include survivalist, small and unregistered enterprises. Originating from urban centres, informal economy would include a multitude of informal enterprises such as street traders, vendors, hairdressers, caterers, dressmakers, etc.

Historically, targeted enterprise development for survivalist and small-scale enterprises been associated with philanthropy – where non-profit organisations would help poor people to operate Income Generating Activities (IGAs) and microenterprises as vehicles to help the poor and vulnerable claw their way out of poverty (Midgley, 2008, cited by Lateh et al., 2017). Lateh et al. (2017) affirm that this category of enterprises are largely owned and operated by individuals, and are often supported by their family members.

Microenterprises very often operate in local value chains by offering commodities and services specifically for local customers. Obviously, such microenterprises are known to provide fresh produce, food products, household goods and any specialised service that would respond to typical demands of local market. In this way, such microenterprises add value to local economies by generating incomes for their owners and workers, and by extension support the established urban enterprises. However, the failure rate of microenterprises in general is high because they often do not find adequate business training and mentorship, production inputs, production infrastructure, sustainable markets and operating capital. Such experience is significant for the study because it represents business hardships and failures of farm-based microenterprises and non-farming IGAs operated by small-scale farmers.

4.4 OVERVIEW OF FOCUSED SAVINGS GROUPS

The purpose of this section is to introduce the concept of focused savings groups which employ the VSLA methodology. This section also shows the reason behind the adoption of VSLA methodology by many non-governmental organisations that recognise the potential of community-based and savings-

led microfinance programmes. Some NGOs promote saving groups programmes as a means of providing poor and vulnerable communities with basic financial services. In this context, savings groups are seen as a springboard to promoting financial education, savings and income generating activities.

There are two main branches of savings groups. These are ROCSAs and ACSAs. VSLAs are part of the ASCAs. Generally, savings groups described as user-owned and operated informal financial institutions and are also known as stokvels in South Africa. In all instance, creators, founders or members of savings groups agree to save regular amounts of money, and in the case of South Africa, they meet monthly to conduct their business which is to pool savings, build and re-purpose group funds to provide small loans to borrowers during a saving cycle. A saving cycle is a measure of time a savings group takes to execute and complete its business, and in the case of South Africa a saving cycle is usually 12 months.

The difference between ROSCAs and ASCAs can be simplified in this fashion. Members make fixed contributions in a ROSCA and the entire group fund in a month is given as a lump sum to members on rotational basis (Samer, 2015). For ASCAs, and specifically for VSLAs, members decide to make fixed or varying contributions at the start of a new saving cycle. There are two ways of distributing group funds to members at the end of each savings cycle. Group funds are either distributed proportionally to the individual savings in the case of varying savings or equally in the case of fixed savings (Allen & Staehle, 2009).

Many non-governmental organisations promote VSLAs as a strategy to address financial exclusion, the consequences of poverty and to strengthen their Sustainable Livelihoods (SL) programmes (Dallimore, 2013; Delany & Storchi, 2012; Hugh & Staehle, 2009; Hamadziripi, 2008). This is because VSLAs are unique in the sense that they use members' regular contributions to self-capitalise or to build group funds that are used to provide microloans to internal borrowers. In this instance, a VSLA builds a group fund, provides interest-bearing short-term microloans and distributes a group fund proportionally to individual members' savings at the end a saving cycle. This means that all the money in the group fund, which includes savings, interest and fines is paid out to the members proportionally to their savings at the end of the savings cycle.

Based on extensive implementation and evaluation studies of VSLA programmes by researchers such as Mahlalela-Dlamini (2022), Ncube (2020), Ngocbo (2019), Bophela and Khumalo (2019), Allen (2018), Frisancho and Valdivia (2017), Burlando and Canidio (2017), Entz et al. (2016), Custers (2016), Dlamini (2016), Banerjee, et al. (2015), Mader (2015), Waller (2014), Matuku and Kaseke (2014), Dallimore (2013), Delany and Storchi (2012), Duvendack et al. (2011), Högman (2009) and Hamadziripi (2008), Verhoef (2001) many non-governmental organisations have found innovative ways to integrate VSLAs in their strategic community development programmes including the promotion, training and support of rural microenterprises. A flexible curriculum and learning programme was pioneered in Niger by Cooperative for Assistance and Relief Everywhere (CARE) as early as 1991, and this curriculum had since been constantly adapted and refined by many non-governmental organisations. This, however, does not mean that microfinance programmes have been free from criticism. Some challenges and failures of microfinance programmes have been researched and published. For example, Mahlalela-Dlamini (2022), Ncube (2020), Mader (2015), Bateman and Chang (2012), Duvendack et al. (2011) and Dichter (2006) raise concerns that the positive impacts of savings groups programmes maybe oversold. The critique of microfinance and savings group programmes was not the focus of this study.

4.5 THEORIES RELEVENT TO FARM-BASED MICROENTERPRISES

This study reviewed sustainable livelihoods (Chambers and Conway, 1992), resource-based view (Barney, 1986; Wernerfelt, 1984) and resource dependency theory (Pfeffer and Salancik, 1978) in order to understand factors that contribute towards greater success and sustainability of farm-based microenterprises.

4.5.1 Sustainable Livelihoods

The concept of Sustainable Livelihoods (SL) dates back in 1987 when the advisory panel of the World Commission on Environment and Development (WCED) made a call for a revised and integrated approach to poverty, under-development analysis and intervention programming (WCED in Ashley & Carney, 1999). Chambers and Conway (1992) assert that "a livelihood is sustainable when it can cope with and recover from stresses and shocks, maintain or enhance its capabilities and assets, and provide SL opportunities for the next generation; and which contributes net benefits to other livelihoods at the local and global levels and in the short and long term (p. 7)."

Krantz (2001) and Rengasamy (2009) share the significance of SL as a development theory. They contend that SL theory:

- goes beyond household incomes and takes into consideration all other signs and symptoms of poverty, which include vulnerability and social exclusion (Krantz, 2001);
- recognises that poverty relates to other dimensions other than income;
- promotes integrated and participatory rural development approaches; and
- puts people at the centre of development and believes that poor people have solutions to development problems they face

The SL theory gave rise to the Sustainable Livelihood Approach (SLA). The SLA is now widely used by many development agencies, research institutions, policy makers and grant makers. The significance of the SLA is that it provides a set of guiding principles, helps with crafting of measurable development objectives and provides an analytical framework for a development intervention, programme or project. The elements of SLA are brought together in the Sustainable Livelihood Framework (SLF). The SLF is an analysis tool that helps in understanding the complexities of poverty by showing how basic elements of SLA relate to each other (Rengasamy, 2009; Krantz, 2001; Carney, 1988).

4.5.2 RESOURCE-DEPENDENCY THEORY

Chambers and Conway (1992) assert that the SLF is the foundation for the resource-based theory (RDT). The RDT is concerned with the interdependence between the business and the external environment. In other words, RDT is concerned with influences external resources have on the performance of a business enterprise. Tehseen and Ramayah (2015) maintain that the external environments provide the most critical resources that businesses require to survive and grow. Given the inherent dependency of farm-based microenterprises on external resources, RDT provides a lens for understanding how farming microenterprises (and related enterprises) navigate forces in the external environment and continue meeting market demands and improving the incomes of their owners.

By applying RDT, this study was able to identify areas where farm-based microenterprises were able to build relationships with external players, such government and non-governmental agencies, extension officers, fellow small-scale farmers and other stakeholders to secure access to critical

production resources and markets. In this instance, small-scale producers and related farming microenterprises rely on networking, building and nurturing mutually benefiting relationships with value chain actors and value chain supporters in the external environment in order to access quality and usable information. Quality and usable information may include market linkages, support institutions, commodity knowledge and trends, access to finance, and access to training and supervision services. Such networking is not different from the practice of established and large business organisations. Established businesses also depend on other external organisations for resource acquisition – and mainly capital, production inputs, road, water and telecommunication infrastructure.

4.5.3 Resource-based View

The concept of resource-based view (RBV) is one of the most influential theories in small business research that is used to dissect and explain reasons behind the success and/or failure of small businesses (Xin et al., 2023). RBV is concerned with internal resources. The concept of RBV was first used by Wernerfelt (1984) and later expanded by Barney (1986) to explain that the success of microenterprises is dependent on careful integration of internal capabilities and internal resources (Barney, 1986, 1990). In other words, RBV's focus is business management in terms of allocation and control of internal tangible and intangible resources by business owners for them to continuously improve the performance of their enterprises (*ibid*). Intangible resources may include reputation, information, knowledge, skills and competencies that business owners employ to improve business performance for tangible resources to yield profitability (*ibid*). Obviously, tangible resources are all income generating assets which may include physical resources such as cash in-hand, access to credit, skilled labour and property. In this instance, property may include production inputs such as land and irrigation water, buildings, tools and equipment (Radzi et al., 2017). The significance of RBV is that all the business resources remain within the control of each individual business operator in ensuring that the business is profitable and remains on the growth trajectory.

In conclusion, the presence of an enabling (or disempowering) environment, either promotes or inhibits enterprise development activities and growth (Barney, 1991). SLF, RBV and RDT have been found to complement each other in providing a coherent analysis microenterprises that are operated by small-scale farmers and participants of the FLGs and VSLAs:

- Firstly, RBV provides a lens to analyse the relationship between resources and capabilities that are deployed by operators to improve performance and profitability of their microenterprises. Within the context of small-scale farming operators, RBV provides a useful framework that enables researchers to pinpoint the essential internal resources, both tangible and intangible which are critical for the success of a business enterprise. In other words, RBV underscores the significance of each individual business owner to leverage tangible and intangible resources to achieve farm success and profitability.
- Secondly, RDT offers a valuable framework for understanding the dynamics of the external environment in terms of business operators accessing external resources that are critical for the success of small-scale famers and their microenterprises. Access to land, access to capital and credit and access to training and supervision services play a significant role with regards to the success of farm-based microenterprises.
- Lastly, SLF provides researchers with an analytical tool to measure if microenterprises operators are able to combine assets and capabilities that they need to maintain and/or improve quality of life; and to identify risks, opportunities, internal and external forces that help them to cope with and recover from stresses and shocks they may experience.

4.6 RESEARCH DESIGN

This study adopted an exploratory qualitative research design using a case study approach (Alkarney & Albraithen, 2018; Yin, 1984, 2018). The exploratory approach aimed to provide the opportunity to dissect the nature of small-scale farmers' experiences and perspectives regarding operating small-scale enterprises. The goal was to obtain a richer understanding of the experiences of small-scale farmers relating to what they perceive as success factors in running their microenterprises.

Cited in Maree (2012), Yin (1984) defines the case study research method as "an empirical inquiry that investigates a contemporary phenomenon within its real-life context when the boundaries between phenomenon and context are not clearly evident; and in which multiple sources of evidence are used" (Maree, 2012, p. 75). Specifically, an explanatory case study seeks to explain the presumed causal links in real-life situations (Yin, 2003). A case study strategy was found most suitable to obtaining an in-depth characteristics of business enterprises that contribute towards greater success and sustainability of microenterprises within the small-scale farming space. A case strategy was also found appropriate because it allowed for exploration of more than one case, leading to rich empirical descriptions (Saunders et al., 2019).

4.6.1 SAMPLING

The significance of a case study method is that it provides tools to study a specific phenomenon (Rule & John, 2011). The study was conducted in selected rural villages KwaZulu-Natal and Limpopo provinces and specifically in rural communities where MDF implements its CRA programme. The study was conducted amongst participants of FLGs found in these rural villages. These rural villages shared at least three common features. Firstly, the economy of these villages is predominantly agrarian. This makes small-scale farming the lifeline for better livelihoods, local economic development and rural development objectives. Secondly, these villages are dependent on small rural towns for public services and in particular accessing production inputs. Lastly, these villages generally face landscape degradation, water scarcity and harsher climatic changes.

A total of 18 respondents, 15 adult women (83.3%) and 3 adult men (16.7%) were purposively selected and were considered adequate for this study. Respondents in the study were all members of FLGs and the majority of them participated in VSLAs. However, 3 respondents were not part of the VSLA programme. Data saturation was reached, as no new information was brought out after 11 (42.3%) interviews. Respondents were purposively selected in consultation with extension officers of MDF. Purposive sampling was used to identify cases that would best answer the research questions and meet the objectives of the study (Saunders et al., 2019). Involvement of the extension officers was important because they have in-depth knowledge of the participants of the FLGs and VSLAs. Selected respondents in the study have been part of the MDF development for more than five years.

4.6.2 DATA COLLECTION

Semi-structured interviews were used to obtain lived experiences and insights from the respondents. All interviews were conducted face to face at respondents' homesteads and production facilities. The study was guided by the case study data collection principles that allow the use of multiple sources of evidence (Yin, 2018). A questionnaire was prepared to guide semi-structured interviews (Cresswell & Creswell, 2018). The interviews were conducted over a period of 3 months. The duration of an interview session ranged from 60 minutes to 90 minutes. The interviews were recorded and then transcribed into a written document to enable data analysis. In addition to interviews, site visitations

were conducted in order to gather additional data. Pictures were also captured with the consent of the respondents. The combination of interviews and site visitation of production facilities enabled the researcher to obtain a comprehensive understanding of the phenomenon under investigation (Yin, 2018).

Ethical considerations were observed in this study. The purpose and the approach of the study was presented and discussed with the respondents before the interviews. This time was also use to secure consent to participate in the study. This was also done to improve the credibility of the study and to help the respondents to prepare for the interviews (Saunders et al., 2019).

All the respondents were initially contacted by the extension officers to ask for their willingness to participate in the study. Full details about the study were presented to the respondents. It was explained that their participation was voluntary and they had the right withdraw from the study at any point they decide to do so. The right to refuse to respond to questions that respondents deem uncomfortable was also explained. Respondents were assured of their anonymity and confidentiality of their identities before consenting to participate in the interviews. Thereafter, extension officers contacted the respondents via their mobile phones to set up interview appointments based on their preference of time and day.

4.6.3 ANALYSIS

Thematic analysis was used because it provided flexibility in identifying, analysing, and reporting data patterns (Braun & Clark, 2013). This meant going through interview and observation notes for the purposes of identifying categories and emerging themes (Rule & John, 2011). The following were key steps that were taken in analysing data. Firstly, data was coded in order to develop categories. Connections between the categories were identified. Secondly, common overarching themes from the responses of all respondents were identified. Lastly, a deeper analysis and focus on thick description of primary data was undertaken. Reading of data was iterated several times before coming up with categories and themes (Braun & Clark, 2006).

4.7 RESULTS AND DISCUSSION

The results revealed seven main themes as success factors for farm-based microenterprises and are discussed below. These findings resonate with the SL, RBV and RDT. They demonstrate the significance of the internal resources and capabilities in encouraging the respondents and driving the success of their enterprises.

4.7.1 STORIES OF CHANGE

The experiences of the two respondents below describe the type of the participants in the MDF CRA programme. MaMkhize and Bab'Mlangeni (fictitious names) volunteered to have their stories of change published. Fictitious names have been used to protect the identity of the respondents.

MaMkhize



Pictures showing production facilities in MaMkhize's homestead

MaMkhize is a middle-aged widow who earns her income from a number of activities. Her husband passed away about 4 years ago and she was left to take care of the household alone. Her passion in agriculture dates years back when her migrant husband was still alive and working in Johannesburg. Her eldest son is about 18 years old and her younger daughter is very active in farming activities and helps her a great deal.

As shown by the three pictures above, she has over just over 1.5ha of a vegetable and over 2ha maize field. She produces and sells mainly cabbages, spinach, green pepper, onions and potatoes to her village. Currently she has over 300 heads of cabbages that will be ready for harvesting in about two weeks. She also produces beans in her maize field. She produces other vegetables but mainly to feed her family. She mainly uses maize to feed her traditional chickens and goats. The bulk of the dry maize is consumed by her family. She was able to invest in small gravity-fed irrigation reticulation system and shares water from a protected spring with her neighbours. She has also drilled a private borehole in her vegetable production area for more secure water access for farming. The size of her vegetable garden, small irrigation and a tunnel allows her to produce vegetables in throughout the year. She also produces broilers and eggs that brings money into the household. Lastly, she operates a tuck shop where she also sells farming inputs closer to the planting seasons.

She is also an active member of a VSLA. In the past 12 months she has accessed about R13 000 from her VSLA to finance her production activities. Although she struggles with record keeping, her records show an annual income of over R87 000 from farming enterprises and about R48 000 from her tuck shop. Together, these enterprises had generated over R43 000 profit in the last 12 months giving here an average of R3 600 net profit per month. She is very grateful of the support that she constantly receives from MDF.

Bab'Mlangeni



Pictures showing production facilities in Bab'Mlangeni's homestead

Bab'Mlangeni is also a middle-aged married man. He is a very active farmer. As a family, they have managed to fence the fields and vegetable garden. They were able to buy a small electric water pump. Bab'Mlangeni installed a small irrigation reticulation on his own to extract water from the nearby river. Together with his wife, they produce a range of vegetables that they sell mainly in Winterton. They have vendors that they supply Bergville as well. His wife is responsible for going to Winterton at least three times a week to sell fresh produce. She makes just over R300 per day, or R3 600 per month. They produce maize as well, which they mainly use to feed pigs, goats and cattle. Currently, they have 28 piglets that are ready for sale. Each piglet is sold for R200. They sell an average of 6 piglets per month to the villages.

They recently exchanged four cows for a bakkie. They use this bakkie to transport farming inputs and fresh produce to Winterton. They have made about just over R62 000 in the last 12 months and achieved a net profit of about R42 000. They are able to make just over R3 500 average net profit from all enterprises. They are not members of any VSLA in the village.

Their plan is to save for a small abattoir to slaughter pigs and chickens and may be beef in few years to come. His biggest worry though is regulatory compliance issues. He believes that MDF will hand-hold him through this journey. He is also worried that his children do not want to support them in all farming activities. He is also very thankful of the support of they are receiving from MDF.

In total, respondents similar to MaMkhize and Bab'Mlangeni managed to change their livelihoods for the better by participating in the CRA programme implemented by MDF. The table below shows capital outlays for both farm and non-farm enterprises.

Farm Enterprises			**Non-Farm Enterprises**		
Vegetables	11.0%	65 050	Tuck shops	26.8%	158 880
Grains	5.7%	33 600	Selling household items	3.5%	21 000
Broilers	13.7%	81 400	Grass mat making	1.2%	7 000
Egg layers	8.8%	51 970	Baking	5.1%	30 000
Goats	1.6%	9 600	Garment making	9.2%	54 600
Cattle	0.2%	1 000	Miscellaneous businesses	13.3%	79 200
Sub-total	**40,9%**	**242 620**		**59,1%**	**350 680**
Total capital outlay for both farm and non-farm enterprises					**R593 300**

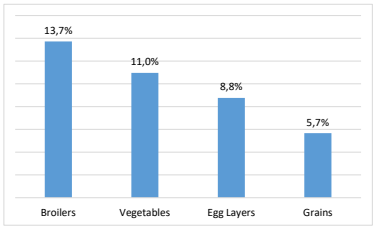
Table 1 showing the split between farm and non-farm business enterprises

As shown in table 1 above, the study found that respondents collectively mobilised about R593 300 in a year to finance both farming and non-farming IGAs. The study found that 59.1% was used for non-farming and 40.9% for farming enterprises. Non-farming IGAs were used to supplement incomes from farming enterprises and ultimately household livelihoods. The study also found that about 35% of the operating capital was received from the VSLAs in the form of microloans and lump sum cash pay-outs. Further analysis of average earnings and profit is discussed in the sub-sections below.

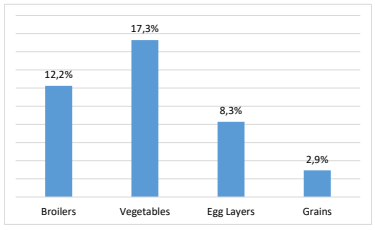
4.7.2 Responsive Small-scale Farming Enterprise

Although respondents clearly understood that the goal of any business enterprise was making profit, making profit is not their main concern. Their primary incentive for operating farming microenterprises was to meet the consumption priorities of their individual households. Therefore, their main indicator of success was the ability of a farming microenterprise to generate adequate yields that satisfy main consumption needs for a family before generating additional income. The majority of respondents revealed that they spend substantial amounts of money to grow maize for the purposes of providing food for their families and supplementary feeds for their livestock. They also revealed that they only sold small quantities of surplus dry maize when they were certain that they would have enough maize to take them to them to the next harvesting season. They used money earned from maize, and added it to other savings to finance the future production seasons.

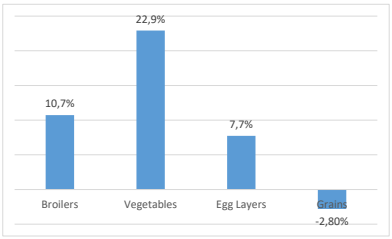
In addition, farming microenterprise owners were fully aware of opportunities in their agricultural value chains. They were also aware of some inherent institutional challenges in the small-scale farming space that were likely to drive them to extreme poverty if they chased opportunities that were perceived lucrative in their local value chains. It was not failure on their part to act on lucrative opportunities, but the recognition of constraints such as lack of resources and knowledge to take advantage of such opportunities. This finding suggests that the owners of farming microenterprises had a different views of business success. For them, food security, household survival (making ends meet) and the ability of mitigate perceived future risk were main indicators of success. Small-scale farmers do this by supplementing their incomes by running non-agricultural IGAs such as tuck shops, garment making, services, baking and selling of household products.



Graph 1: Capital Outlay



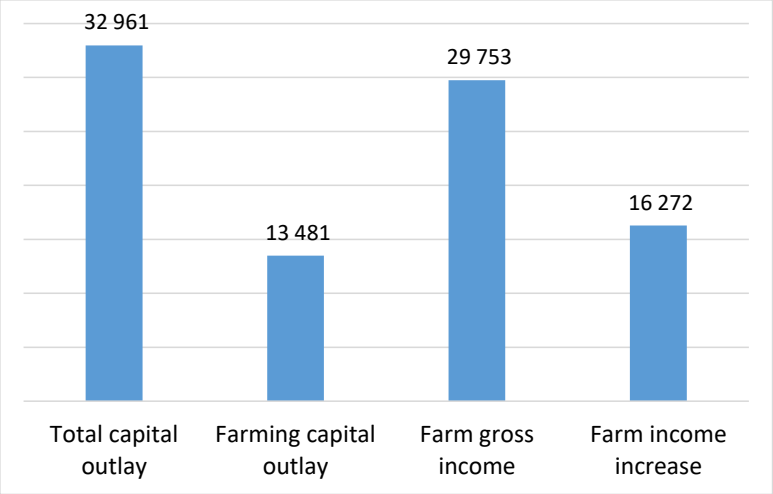
Graph 2: Income Earned



Graph 3 Profit Earned

Graphs 1-3 showing percentage of capital outlay, income and profit earned from farming activities

Graph 1 above shows that 39.2% was used to produce broilers, vegetables, eggs and grains (mainly maize). These are most popular commodities that are produced by the respondents. Vegetables had highest returns in terms of revenue and profit compared to the other three commodities. The main reason for higher returns on vegetables that was cited by the respondents is that production costs for vegetables are usually once-off and lower compared to broilers and egg layers. Respondents also revealed that they do not record quantities of produce they consume or donate to needy neighbours and relatives. Interestingly, the returns on grains do not match the size production costs. In fact, farmers incurred losses. However, farmers increased their monthly earnings shown in the graph 4 below.



Graph 4 showing averag capital outlay and earned income

Graph 4 above shows an average increase in farming income of around R16 000 per annum (or R1 300 per month) of an individual farmer. This is based on investing and recycling about R13 000 into more than one farming activity that generates income. Findings showed that farmers earn profits despite them incurring losses from maize. The study found that all farmers produce maize but not for direct commercial goals. There are few reasons associated with this practice and are explained next.

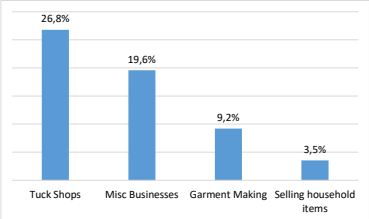
Farmers plant maize but not for commercial goals. In fact, respondents argued that producing maize was not a loss to farmers. They revealed that having enough maize produce was most beneficial for their households and livestock. This is because maize is used for human consumption. In all instances, having maize for human consumption meant reduced spending on monthly grocery items for the household. A small percentage of maize is used for animal feeds (for traditional chickens and supplementing feeds for goats, pigs and cattle) which always keeps production costs to levels farmers could afford. In return farmers were always ready to sell one or two cows and few traditional chickens only when approached by buyers outside their villages. Further to this, there are intangible gains that respondents enjoy in non-commercial activities. However, intangible gains are not easy to quantify in monetary terms. This practice clearly demonstrates that respondents involve themselves in a range of activities that are geared towards improving the well-being of their households. The SLA recognises the significance of mixing of income generating activities and non-commercial activities. This is because the SLA accepts that there are multiple paths that people take in order to improve the well-being of their households.

In closing, the study found three defining features of a successful farming microenterprises. First, operators of farming microenterprises are willing to invest time, patience and hard labour for intangible returns which in many cases exclude immediate profits. Farmers believe that there are commodities like maize that are not produced for immediate financial returns, but for the psychological and emotional health of the head of the family – by knowing that there is enough food that is always available for the family and livestock. Second, their measure of success and sustainability is their ability to afford production inputs come the next season. In many instances, commodities that generate higher incomes would be used as a cash-cow for the family. Third, owners of farming microenterprises constantly looked for additional income sources to supplement farming incomes.

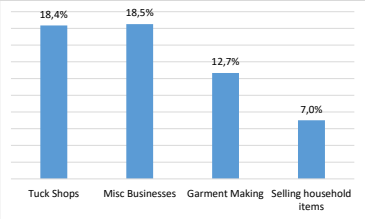
4.7.3 NON-FARMING IGAS

The study found that respondents used almost 60% to finance non-farming IGAs to supplement farming incomes. For many small-scale farmers, sticking to farming-only commodities was tantamount to income stagnation and exposing their household livelihoods to risk.

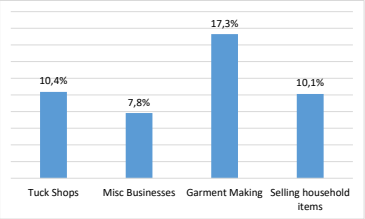
In this instance, IGAs refer to a set of activities that fall outside farm-based enterprises operated by participants of the FLGs. IGAs that fall outside agricultural value chain that respondents operate include small home-based retail outlets (tuck shops), grass cutting, grass mat making, operating local cab, baking, garment making, and buying and selling of household products. Grass cutting, grass mat making, operating local cab and baking are grouped as miscellaneous businesses in the graphs below.



Graph 5: Capital Outlay



Graph 6: Income Earned



Graph 7: Profit Earned

Graphs 5-7 showing percentage of capital outlay, income and profit earned from non-farm IGAs that are used to supplement farming enterprises

The issue of non-farming IGAs was commonly raised by the respondents. As shown in the in graphs above, tuck shops, miscellaneous business, garment making, and buying and selling household products were found to be the most popular income supplementing activities amongst the respondents. The findings reveal that retailing which include tuck shops and selling of household products account for 25.4% income and 20.5% profit from 30.3% capital outlay. However, garment making had the highest profit of 17.3% from 9.2% capital outlay. The findings also revealed that respondents engaged in non-farming IGAs for two reasons. Firstly, to sustain household incomes while waiting to harvest. Secondly, to strengthen the relationships and build loyalty with regular their customers. Some respondents wished that they could receive more guidance and supervision on business management and marketing so that they can be able to invest more on farming activities. These respondents have noticed that vegetable production give them high returns in the shortest space of time which is usually three months. However, other respondents felt that non-farming IGAs were drifting them away from agricultural enterprises hence some IGAs were providing them with substantial incomes. This was the case with garment makers and buyers and sellers of household products. They observed that some IGAs tended to operate throughout the year. In fact, three respondents had more non-farming IGAs financing their main farming activities.

Some key lesson relating to business management and financial planning can be drawn from this experience. Respondents who were successful in running multiple enterprises gained some experience regarding maintaining a balance between farm and non-farm enterprises. These respondents knew if there were crop failures, prices would go through the roof, and they would make huge profits. They were also aware that if supply outstripped the demand, they were likely to make losses hence their focus on non-farming IGAs. These respondents revealed that they would spend a percentage of their profits on things such as production infrastructure, equipment and inputs they are likely to need for one or two years to come. Some examples of equipment bought by farmers include

electric water pumps, fencing materials, small delivery van, baking stoves, sewing machines and brush cutters.

Findings revealed willingness to participate in learning events, basic literacy and numeracy of small-scale farmers and their household members as the most important asset. Assets, such as literacy, numeracy, harmonious relationships, technical skills such as raring chickens and cropping have been used by farmers in a number of productive activities. Combining such assets, small-scale farmers have been successful in allocating labour to different activities to produce outcomes such as food security, income and profit that is shared between household consumption and income generation.

Findings also showed a clear relationship between farming and non-farming enterprises. It would appear that the relationship between certain farming and non-farming enterprises were influenced by three realities:

- first, were food security concerns for the households,
- second, was the magnitude of financial returns based on demand and supply and general patterns of development in the village, and
- third, was access to, and the ability to use productive assets for consumption and profit.

This provided some insights into how the promotion of certain enterprises influenced the path that small-scale farmers took in order to improve the overall well-being of their households.

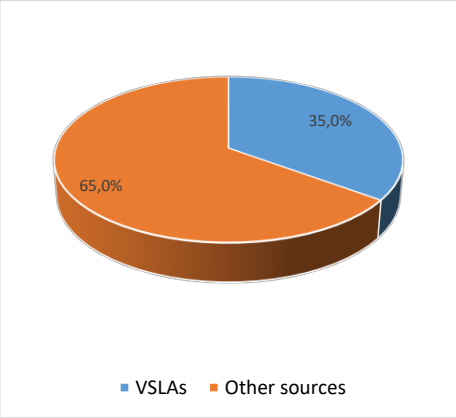
4.7.4 VSLAs as Alternative Financial Resources

One of the key success factors pointed out by the respondents was access to cash that was provided by the VSLAs. This is consistent with previous studies that suggest access to finance determines success of any business enterprise (Sroka et al., 2023; Lekhanya & Mason, 2014). However, access to useful financial services and especially credit by microenterprises and small-scale farmers remains the most frustrating impediment. Formal financial institutions and mainly banks do not have appetite to service small-scale farmers and microenterprises. Qing et al. (2021) have also found that small-scale farmers struggle to access to financial resources they need to participate meaningfully in agricultural value chains in their local spaces.

This reality had forced owners of microenterprises to look for alternative financing mechanisms, i.e. outside the banks, state-grant makers and Development Financial Institutions (DFIs). In this instance, the respondents would top their personal savings with money they receive from the VSLAs in the form of microloans and lump sums they receive at the end of each savings cycle. This makes VSLAs important sources of start-up and operating capital for microenterprises. Findings show that at total of R593 300 to finance production activities. Graph 8 below shows that about 35% of operating capital was sourced from the VSLAs. The significance of this can be summarised as follows:

- Operators of microenterprises in rural communities were very aware of the fact that they had to save in order to produce enough food to consume and to sell.
- VSLAs were most usable and responsive platforms that savers used to build loan funds. These loan funds were used to give internal borrowers microloans which they returned with interest. Non-entrepreneurial savers earned interests while entrepreneurial savers earned both interest and profits from their individual enterprises.
- VSLAs helped savers to re-purpose and recycle incomes households receive for improving the quality of life. In this instance, respondents used a portion of pension grants, child support grants or remittances to participate in their VSLAs.

These findings suggest that VSLAs are instrumental in reorienting and re-purposing savings groups to providing some production finance and contributing towards sustaining livelihoods. Provision of production capital by VSLAs resonates with RDT. By participating in the VSLA programme, owners of microenterprises joined hands with VSLAs and created collective schemes that provided them with operating capital outside the formal banking institutions.



Graph 8 showing sources of capital

The findings revealed that VSLAs could not solve all the challenges facing the respondents in terms of farm production and development of their microenterprises. This is because VSLAs have a few inherent limitations. Institutionally, VSLAs draw from a tradition of providing short-term consumption loans and lump sum pay-outs at the end of saving cycles, usually 12 months. In most cases, both short-term loans and cash pay-outs struggle to align with production schedules of many small-scale farming enterprises hence the appetite for non-farming enterprises. Loan terms are very restrictive as borrowers are expected to begin servicing their loans from the first month and to settle loans in about 3 to 4 months. Besides this, generally, loans are too small to finance large enterprise production costs. The result is that risk-averse borrowers become discouraged to take out business loans fearing that their businesses may not generate sufficient profits to service loans. However, the study also found that owners of enterprises that had passed survivalist phases and had multiple sources of income tended to have more appetite to take substantial business loans. For example, respondents had used loans to buy large quantities of feeds for broilers and egg layers. They were also bold to take out loans to buy large quantities of production inputs, tuck shop stock and buy equipment such as brush cutters.

This study noted a significant role played by the VSLAs. VSLAs are largely under-recognised financial institutions by the formal sector and are mostly used by financially excluded populations as alternative financial service providers. For the respondents, they saw VSLAs as enabling financial institutions which provided them with access to cash when they needed it. Respondents liked the fact that savings and interest earned stayed within the VSLAs. Informal financial institutions and VSLAs are a worldwide phenomenon mainly in under-served communities and are testimony to the resourcefulness of the marginalised populations.

4.7.5 Useful Knowledge Acquisition

Knowledge and skills as a result of training and supervision mainly by MDF emerged as a prominent theme from all respondents. Knowledge acquisition through workshops and knowledge application in their production facilities came out strongly from all respondents. All respondents confirmed their participation in various training events and information sessions organised by different stakeholders

and mainly MDF. Informations sessions, training events and field supervision exposed the participants to a range of skills that enhance their livelihoods. Respondents regarded knowledge acquisition and application as a key resource for strategic decision making, adoption of CRA practices, selection of profitable income generation activities, financial literacy, production planning and scheduling of production activities.

Knowledge acquisition and application aligns very well with RBV as respondents used acquired knowledge to better their livelihoods by engaging in specific production areas. Respondents reported that new skills helped them to improve farm yields, understand their finances better, and identify profitable commodities and IGAs to supplementary their farm incomes. Respondents also reported that they saw value in knowledge acquisition that was accompanied by practical application. Evidence was shown that constant supervision by MDF's extension officers drastically improved key aspects of farm production, strategic use of VSLA in production and tactical integration of non-farming IGAs. This finding aligns with past studies that argue that small-scale farming enterprises that enjoy constant support and supervision are more likely to succeed because of their enhanced abilities to prevent and/or mitigate risks associated with production and markets (Adeola & Gyimah, 2020). Lastly, the study also found that FLGs and VSLAs promoted peer learning beyond formally organised learning events.

4.7.6 Adoption of CRA Practices

Adoption of improved farming practices was cited as an important factor by all respondents. This finding aligns with past studies that confirm new agricultural practices add value to the performance of small farms by improving quality and yields. The findings indicated that respondents adopted the recommended CRA practices as a result of training interventions and constant supervision provided by MDF's extension teams.

Conversely, more women farmers mostly observed that the adoption of CRA practices had made a fairly good contribution to household food security and income generation. The main benefits identified by women farmers included constant availability of food, small but regular incomes and limited livestock feeds. Respondents revealed that production was enhanced by two additional factors, which were the availability of production resources (water, fence, tunnels, etc.) and constant supervision by MDF's extension officers. MDF's supported spring protection and small reticulation did not only provided portable water, but surplus water which made it easy for farmers to irrigate their gardens and tunnels. In two instances, respondents had invested in small irrigation reticulation infrastructure and small electric water pumps.

4.7.7 Success Factors of Small-scale Farming Enterprises

Production and farm management practices emerged as a crucial factor in the context of small-scale farming and income generation. Production and farm management practices encompassed a number of activities such as business planning, capital acquisition, financing, crop diversification, production scheduling, marketing planning, supplementary enterprises, financial management and recordkeeping. These production and farm management practices underscore the importance of internal capabilities of the small-scale farmers that determine survival, success, competitiveness and profitability of their enterprises. However, most respondents did not prioritise business planning and record keeping, but instead they prioritised production planning (scheduling), financing and operating IGAs that would supplement their farm income. For them, production planning meant early preparation of their fields and having enough capital to secure production inputs ahead of planting seasons.

Although most of the respondents acknowledged the importance of recordkeeping as a way to monitor the financial performance of their enterprises, we found that recordkeeping was not significant component in the operation of microenterprises. It was found that many respondents would measure the performance of their microenterprises by their ability to recover cost of production, provide for the family, improved cash circulation and the ability to buy production inputs for future production cycles.

All respondents had a background in their respective operations such as subsistent farming, baking and garment making before they embarked on their own microenterprises. The findings reveal that some production background gave respondents an added advantage by way of motivation, discipline, focus and eagerness to acquire and apply new knowledge. However, the findings revealed that few respondents were pushed into farming and business by retrenchment and/or death of a spouse or a breadwinner.

Motivation, dedicated focus on sustaining household incomes for better livelihoods, patience, resilience, financial discipline and willingness to participate and learn were common characteristics of successful small-scale farming enterprise operators. Generally, these shared characteristics demonstrate the importance of human capital resources in operating a successful business enterprise and ensuring sustainable livelihoods.

Possessing financial discipline and restraint, and specifically the ability to save money meant for production activities in the face of household's financial pressures is one of the key success factors reported by the respondents. Faced with scarce resources and competing consumption needs, respondents reported the significance role their VSLAs played in helping them to saving money. They reported that saving money was not an easy task and financial discipline was paramount in avoiding misappropriation of savings meant for farming and business activities.

Resilience was another characteristic that participants shared by relating it to surviving the negative effects of climate change. Some participants had encountered stresses and shocks in their operations that could potentially put them out of business, but they managed to pull through. With financial discipline and resilience, respondents were able to achieve food security and availability of cash when they needed it.

The findings revealed that respondents that were involved in farming microenterprises could sustain their businesses over a number of years as they didn't have other alternatives for survival. The findings also showed that although there was a desire to make these businesses more securely sustainable, risk aversion by some operators discouraged their growth. Findings and field observations suggested that taking entrepreneurial activities that promised high returns was tantamount to exposing their households to high risks and unmanageable stresses. This finding may explain the reluctance of respondents to venture into high-value entrepreneurial activities such as producing high-value crops, value-addition and supplying formal markets. Instead, they preferred supplying their produce to cash buyers like street vendors, bakkie traders and caterers.

4.7.8 SOCIAL NETWORKS

Findings revealed that social networks which involved building and maintaining social relations and business partnerships were very popular amongst the respondents. There were two obvious reasons for this. First, good social networks promoted and sustained reciprocity amongst collaborating peers. Second, ability to build and maintain social networks was a major contributor to building business relationships and collection action.

Findings also suggest that respondents were actively involved in networking activities such participating in FLGs, VSLAs, informal social interactions, joint marketing events, and participating in meetings and information events organised by public sector institutions. For instance, in the province of KwaZulu-Natal, respondents appreciated invitations from the Department of Agriculture and Rural Development (DARD), Okhahlamba Local Municipality, Dr Nkosazana Dlamini-Zuma Municipality, Ubuhlebezwe Municipality, Harry Gwala Development Agency and uThukela Economic Development Agency to discuss LED and agricultural development initiatives. Besides MDF, the respondents had interacted with other non-state institutions on the subject of agricultural development. Through networking, respondents had improved access to information, knowledge and support – and mainly establishing and operating a market stall in rural towns.

The findings also showed that collaborative platforms – and specifically FLGs and VSLAs enabled respondents to own and control financing, production and marketing activities. Besides facilitating learning and development, such collaborative platforms also made it easy for respondents to procure farming of inputs and selling their produce. Through consistent support from MDF, respondents voluntarily organised themselves rather than relying on government institutions. Such collaborative platforms had a number of benefits to the farmers:

- These platforms helped small-scale farming enterprises to get access to urban buyers and to set common prices for their fresh produce.
- Farmers with fewer quantities of produce were able to refer customers to other farmers with adequate quantities.
- In some ways, these platforms helped farmers to lower cost of production through bulk buying and sharing transport cost.
- Supporting agencies like MDF were able to reach many farmers, share of new information and promote the adoption of new CRA technologies.
- VSLAs in particular improved the availability of cash beyond amongst savers.

Evidence submitted by the respondents showed that, indeed FLGs and VSLAs were most useful knowledge sharing and learning platforms for participating small-scale farmers and supporting institutions.

4.8 RECOMMENDATIONS

The following recommendations are based on empirical evidence from interviews and field observations.

- Targeted beneficiaries

The ultimate beneficiaries were mainly women who come from very low income households who generally have depended on state welfare grants, had unstable income sources and precarious finances. Institutionalised and coherent support is therefore key for farming microenterprises just as established businesses. The key need is for intelligently-designed, coherent and well-managed training and mentoring programmes targeting not only the specific commodities, VSLAs and green-friendly businesses. Interventions that empower participants to see their situation differently; that dispel the myths about what it takes to be a successful agri-business entrepreneur; to see that success in business is not about fate, but rather, about hard work, self-confidence, and application of basic business principles; and to see that money making opportunities in agriculture are everywhere and available for everyone.

- Targeted financial education

Financial education is much more than learning financial concepts and how to manage money. Financial education includes the ability of acquiring and transforming economic and financial knowledge into skills that enable individuals to make informed and responsible decisions in the areas of personal finance. Financial education also draws for psychology. Individuals must be able to manage their finances with confidence, understand and use financial concepts, and plan to achieve their financial goals. With a solid knowledge and skills base, one must be empowered to decide with greater confidence how to budget, earn, save and spend money. This means financial education must help individuals to gain more control and security over their financial futures. Personal financial education establishes a solid foundation for starting and operating an IGA or a business enterprise. For this reason, promotion of VSLAs must include intensive component of financial education and spending time on budgeting, recording of income and expenses, creating emergency funds and making income and expenditure projections. The reality is that everyone is bombarded with images of luxurious consumer goods and lifestyles. Media often drives this envy, leading to many to get caught in the allure of living beyond their means. The significance of personal financial education is that it prepares operators of microenterprises in particular to appreciate financial planning, budgeting, record keeping and delayed gratification.

- Responsive financial services

Responsive financial services is about empowering microenterprises to put in place systems that help them respond better to opportunities and challenges. This makes access to production finance extremely essential. At the same time, it is crucial to ensure that there is a good match between financial and non-financial resources made available to the small-scale farmers.

The goal is to help microenterprises to use informal financial services (savings groups) to provide for their operational expenses, improve cash flows and profitability. For this reason, promoting and support farm-based enterprises should commence by professionally-conducted PVCAs to help programme participants to understand the concept of supply and demand and using it to identify most profitable commodities and/or services.

A database of targeted farming microenterprises, production resources (i.e. land, water, infrastructure and equipment), and suppliers of production input, and buyers of commodities should be developed and assessed at the beginning of all development interventions by external development agencies similar to MDF.

- Promote networks and partnerships

Networks, or even partnerships with larger, established operators or with seasoned entrepreneurs within the agricultural value chains must be promoted and established. This is because networks are likely to pay dividends in terms of access to production inputs, skills enhancement, market penetration and familiarisation with quality expectations of the market.

- Promote social enterprises

There are two factors that must be considered here. The first one is concerned with identifying the most paying products/commodities that are likely to pay better dividends. This means putting emphasis on encouraging products and services that cannot be easily threatened by competition from imported products. However, at the same time, one would not want to get trapped in a niche market, and for this, it becomes important to diversify product offerings as a defence against changes in market conditions. The second one is concerned with ensuring that production of commodities advances the realisation of the SL and CRA objectives. This means that farmers must take consistent

actions and champion community-based social enterprises such as communal water management (including springs and wetlands protection), conservation restoration, prevention of soil erosion and dongas, rangeland management and so forth.

4.9 CONCLUSION

This study aimed at identifying characteristics of business enterprises that contribute towards greater success and sustainability of microenterprises within the agricultural value chains. The study collected data from a sample of 18 operators of farm-based microenterprises that had been participating in the MDF programmes in the last 5 years.

The study revealed seven themes that align with SLA, RBV and RDT perspectives that are responsible for helping farm-based microenterprises to leverage internal and external resources. The findings provided a number of implications for development programmes geared towards supporting small-scale farmers as well as considerations for development agencies and stakeholders within the CRA space. The findings revealed three actions that development agencies must consider in packaging community-based intervention programmes.

Firstly, development agencies should consider investing time in social and stakeholder mobilisation processes, understanding value chains and operators, profiling of microenterprises and developing of databases. Similarly, owners of enterprises should be encouraged to network with other like-minded local and regional stakeholders by participating in sector events, such as field farmer days, information sessions and agricultural shows.

Secondly, development agencies must provide integrated and coherent training and supervision of operators of farm-based microenterprises. This means providing production training, promoting CRA and aligned conservation restoration practices, focused ED and long-term on-site supervision and business mentoring to participating operators of farm-based microenterprises. Similarly, participating farm-based microenterprises must participate in all learning and development events and invest time in the application of the newly acquired knowledge. Regarding the application of newly acquired knowledge, farm-based microenterprises should also focus on new agricultural practices and technologies, business management, market penetration and strict recordkeeping.

Lastly, access to useful financial services for farm-based microenterprises is key. This requires a collaborated effort from promoters of alternative financial services provision. This means promoting interventions that gradually move VSLAs to higher levels so that they are able to provide substantial production loans on affordable terms. This also means that development agencies must continue engaging with government institutions to partner with them and provide tactical subsidies to microenterprises that empower recipients to graduate to independence.

4.10 FUTURE RESEARCH

Suggestions for future research are based on the few limitations of the case study approach. It is important to note that the performance of operators of farm-based enterprises vary by region, climatic conditions, crop type, type of land/farm, proximity and access to production inputs and markets. Therefore, the results of this study can be used in many ways, and including the following:

- Using the results of the study as an input in a qualitative study to understand the strength of the relationships between informal farm-based small-scale enterprises and their landscapes and with a focus on CRA and aligned practices.
- Focus on compiling financial diaries of farm-based enterprises in relationship to their economic performance variables such as cost of production, revenue generation, profitability, growth, environmental friendliness and enterprise sustainability.
- Exploration of the future of VSLAs in financing productive activities and the role of supporting institutions. This study can proposed an analytical framework that can be used to package future interventions geared towards promoting production-focused VSLAs.
- Exploration of collaborative/partnership frameworks between farm-based enterprises and supporting non-governmental organisations such as MDF. The focus of such studies can include understanding the extent NGO support influence the overall success of farm-based enterprises in relation to CRA objectives.

Insights from such research assignments could inform policy interventions and strategic initiatives aimed at fostering strategic relationships between farm-based enterprises and supporting stakeholders.

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5. CAPACITY BUILDING

5.1 POSTGRADUATE STUDENTS

Two postgraduate students are a part of this research process.

NQE DLAMINI- PhD: **Learning values through participation in savings groups in Kwazulu-Natal: An Afrocentric case study**. UKZN_Dept of Education (registered in February 2023) and

TEMAKHOLO MATHEBULA –MPhil**: The socio-political dynamics influencing farmer adaptation to climate change in Ozwathini, Kwazulu-Natal.** PLAAS_UWC (registered in February 2024

For Nqe Dlamini the following summary of his thesis applies:

Problem statement: Users of savings groups may not be aware that they learn while they participate in their groups. There is a possibility that users unknowingly resolve the tensions between Eurocentric values and Afrocentric values while they participate in their groups.

Purpose: To explore/understand what values people learn through participation in savings groups and how they learn these, and how people navigate possible tensions between Eurocentric values and Afrocentric values.

Objectives: (1) To explore what values people learn through participating in savings groups; (2) To understand how people learn these values; (3) To understand how people navigate possible tensions between Eurocentric and Afrocentric values

Data collection: Commenced in February 2024.

For Tema Mathebula the following summary of her thesis applies:

Problem statement: In South Africa, the rise in temperatures and instances of extreme weather conditions have had devastating effects on infrastructure, livestock, and crop yields. These critical events have intensified the pressure on smallholder farmers to develop strategies to enhance the resilience of their farming systems. Research and experience have shown that approaches to adaptation and mitigation have been disproportionate and ineffective without an in-depth understanding of the socio-political processes embedded in communities

Purpose: This study aims to provide insight into how unequal distribution of power and political processes undermine the ability of smallholder farmers to cope with climate change. It also seeks to provide a more nuanced understanding of the differentiated impacts of climate change across gender, caste, age, and ethnicity. Lastly, this study aims to investigate the factors which lead to maladaptation of climate change interventions in smallholder farming systems.

Political ecology will be used as a theoretical framework for the study. It is underpinned by two theories, namely, "political economy", which focuses on the dynamics of power distribution and productivity; and "ecological analysis" which focuses on environmental factors.

Research questions: What are the existing socio-political dynamics that influence smallholder farmer adaptation to climate change**?**

Sub Questions

- What do farmers understand about climate change and its influence on their farming activities?
- What are the existing institutional structures for smallholder farmers and how do these influence adaptation to climate change?
- What are the core values, norms and belief systems and how do they shape the allocation and distribution of resources?
- What are the major causes of inequality, power imbalances and social injustice in the agricultural sector and how do these entrench vulnerability?

Data collection: Through semi-structured interviews and focus group discussion. To commence in September 2024.

5.2 COMMUNITY LEVEL TRAINING AND CAPACITY BUILDING

The table below gives an overview of training that has been conducted at community level. It is indicative rather than exhaustive. These trainings are done in the community usually at one of the participants' homesteads and is planned as one day events that include both theoretical and practical sessions.

Table 12: Community level capacity building:2022-2024

ACVTITY	DATES	DESCRIPTION
Training and mentoring for climate resilient agriculture	2022/12/02 2022/10/26 2022/10/08-14 2022/11/23,24,29 2022/02/10 2022/02/27, 03/28 2022/03/08, 03/17, 03/28 2022/03/15 2023/03/07,08 2023/03/29,30 2023/03/24,27,30 2023/04/, 2023/05, 2023/06 2023/04/21,25, 05/26, 06/08 2023/04/19,20 2023/06/22 2023/08/07,08,10 2023/09/19 2023/10/16-19 2023/11/13-17 **2023/12/04** **2023/12/14** **2024/02/23**	Midlands: Ozwathini contouring workshop SKZN: Mahhehle – tower gardens EC-Matatiele: Drip irrigation workshops in 5 villages SKZN: CA demonstration workshops in 3 villages SKZN: Plainhill Drip irrigation training Limpopo: Sofaya trench beds SKZN: Mahhehle tower gardens, poultry production, trench beds SKZN: Mariathal gardens and experimentation Bgvl: Madakaneni, Mahlathini – gardening training EC: Ned, Nchodu poultry production EC: Nec, Nchodu, Mzongwana- Pest and disease control Limpopo and KZN: trench bed training with assembling of tunnels for 45 households across 8 villages, including distribution of seedlings, mixed cropping and mulching learning inputs and drip irrigation Limpopo: Willows, Sedawa, Mametja Sophaya. Bergville-Matwetha, Emadakaneni – Natural Pest and Disease control Bergville, SKZN: Poultry production: eMadakaeneni, Mjwetha, Mariathal, Mahhehle, Centocow EC: Ned, Nkau, Rashule, Nchodu- Soil and water conservation Matatiele: Multipurpose chicken production and cage construction (Ned(13), Rashule(22), Nchodu(23) Matatiele: Nchodu -Value Adding training (32) Limpopo: Boschvelder feeding and management training x 5 villages (50 participants) Limpopo (30): CA demonstrations and farmer level experimentation: intercropping cover crops **-Midlands: Gobizembe Youth group- seedling production training** **-Limpopo: Sofaya(10) , Madeira and Willows (16) CA training and demos** **-Limpopo: advanced nutrition workshop x 5 villages**

	2024/03/22 **2024/05/28**	**-SKZN: gardening refresher workshops (Centocow, Mahhehle, Mariathal, Ngongonini)** **-Matatiele (EC) nutrition workshops x 4 villages**

5.3 STAFF CAPACITY BUILDING

The table below gives an indication of the sessions and processes that have been undertaken with MDF staff and interns.

Table 13: Staff capacity building 2022-2024.

Organisational & capacity development	2022/11/17 2022/12/05 2023/02/13 2023/02/09, 02/16 2023/03/06 2023/03/13 2023/04/17 2023/05/26 2023/06/12 2023/07/04 **2023/10/09** **2023/10/16** **2023/10/17** **2024/02/26**	-MDF AGM and organisational capacity development workshop -Mentoring and planning with new finance officer to implement SODI financial reporting system - Internal short learning event for rainfall and runoff results, as well as soil fertility and Organic carbon - Mentoring in CCA workshop implementation. Temakholo from Midlands assisted Bergville team -Team session on gender mainstreaming - UKZN- Ecological mapping and use of resource planning – Bgvl team -VSLAs review and discussion re group based rules, BLF updates - Nutrient analysis for livestock fodder options: facilitated by Brigid Letty from the INR -Small business development support planning and Livelihoods survey -MDF AGM and organisational capacity development workshop **Conservation agriculture participatory research outcomes and presentation for CA forum with interns and staff** **- Training plan development with interns** **- M&E frameworks discussion with Karen Kotschy and team members** **-Financial team: Introduction to online Sage platform**

6. WORK PLAN: SEPTEMBER 2024- AUGUST 2025

The following broad activities are to be undertaken during this period:

- Continuation of implementation for the CRA learning groups across three provinces
- Ongoing involvement in CoPs: AN-capacity building and learning, PGS-SA, Northern Drakensberg collaborative
- Update on postgraduate students' progress: Nqe Dlamini (PhD) _UKZN and temakholo Mathebula (MPhil)_ UWC.
- Finalization of climate resilience monitoring framework and indicator sets, analysis frameworks and dashboards.
- Discuss potential collaboration with the Climate systems Action group (Dr Peter Johnston) from UCT, to provide datasets for the decision support (dss) platform that incorporate climate change aspects more directly than the present sets and update the tool accordingly.
- Updating practices and online dss platform and formalize collaboration with the Amanzi for Food platform for dissemination
- Finalize manual for a framework for successful implementation of multi stakeholder platforms and
- Prepare the final report

Table 14: Work plan –September-December 2024

Work plan Sept-December 2024	Team	Activities	Sept-Oct 24	Nov-Dec 24	Submission

Refined CbCCA decision support framework with updated databases and CRA practices	MDF: Erna Kruger, Matthew Evans, Anna Kotschy	Update CRA practices and expand agroecological zones			2024/12/13
	MDF and ELRC (Rhodes) Wilma van Staden	Finalise sharing of Amanzi for Food platform and including of dss			
	MDF and CSAG (UCT- Dr Peter Johnston	Discuss collaboration in updating modelling data for the dss platform to incorporate climate change and more accurate regional climate data into the model			
	MDF: Erna Kruger INR: Brigid Letty	COPs: Northern Drakensberg Collaborative continuation Proposal development through Lewis Foundation			
	MDF; Erna Kruger and Karen Kotschy	Finalise climate resilience MERL framework and develop online tool with dashboards			

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8. 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 kgs/tons), 10,20,50kg bags/containers,	Proportion consumed vs sold (e.g.) 70% (thus 70% eaten)	Amount now(in kgs/tons, 10,20,50kg 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 practiced 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 (ave monthly from farming)**	**Income now (ave 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	**Are you part of VLSA group Y/N**	**Name of the VSLA group**	**Number 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 …**
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 eg. 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, 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….*

3. Practices: Recap 5 fingers and list all practices under each category

- Re-introduce the 5 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 other)?

Go around in the circle and each person mentions what s/he has done (productive, economic, social, personal actions) and what she would still like to try

- Add these practices to the five fingers diagram

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

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

- What changes have there been?

Brainstorming changes – an interrogate to get to the 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 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 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 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 are able to do now that they weren't able to do before- list*

Transformative capacity:

- Inclusivity of networks: Extent to which networks includes women youth and other vulnerable groups. *% 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 connections' meetings/events with people outside the community - other villages, stakeholders.*
- Changes in personal attitudes, motivations and beliefs: *farmers' perceptions on how they think they have grown and changed, and no 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 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 milies				
Dry maize				
Beans				
Other				
Livestock				
Broilers				
Eggs layers to sell eggs				
Indigenous chickens				
Boschvelders				

Commodity	When do you sell your 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 from 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 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	
Marker 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 that 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 & 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?

_____

_____

SUPPLEMENTARY 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 in order to generate income for your household? Give details of your top 3 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 profit?

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

When?	Loan: How much?	Share-out: How much?	What was it used for?	Did you make profit?
6 months back				
A year back				
Last 2 years				
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 have you taken 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 have you received 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 share-out that you used in your business? _____

7. **Total business finance:** Looking back last year and 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? Chose 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 regards to the following activities?

Areas of working together	**Yes**	**No**
Planning together		
Learning and sharing knowledge with regards to:		
• 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 groups 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 characteristics of a successful business enterprise? *Refer to 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 in order 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: SUMMARY OF PRODUCTIVITY AND INCOME GENERATION FOR ALL FARMING ACTIVITIES IN LIMPOPO – FROM ESILIENCE SNAPSHOT INTERVIEWS (N=20), JUNE 2024

Province	Village	Name	male	female	Yrs under CRA	Eaten	Amount in kg	Inc in amount	Income	increase in income	Livestock						
											Cattle	Goats	Indigenous poultry	Boschvleders	Broilers	Layers	Pigs
Limpopo	Turkey	Mgalangake Mogale		1	8	52%	6107,0	5360,0	R57 920,00	R50 288,00	0	0	0	0	0	0	0
Limpopo	Turkey	Magelina Shai		1	6	68%	1417,0	211,0	R9 890,00	R6 890,00	0	0	0	0	0	0	0
Limpopo	Turkey	Nkhurwane Sahi	1		8	64%	1891,0	1124,6	R148 790,00	R8 710,00	18	10	20	48	0	0	0
Limpopo	Turkey	Norah Thsehla		1	8	49%	1612,0	797,0	R8 259,00	R5 408,16	0	0	0	0	0	0	0
Limpopo	Turkey	Lydia Mogofe		1	8	59%	1235,0	265,0	R22 365,00	R2 320,00	0	0	All stolen			0	0
Limpopo	Turkey	Sarah Mohlala		1	8	78%	971,0	54,0	R2 730,00	R372,30	0	0	23	5	Goats stolen	0	0
Limpopo	Willows	Esther Monyela		1	4	69%	735,0	230,0	R58 350,00	R842,50	22	0	0	0	0	0	0
Limpopo	Santeng	Lethabo Malepe		1	4	86%	430,0	160,0	R210,00	R211,00	0	0	21	0	0	0	0
Limpopo	Santeng	Fridah Khokhlwane		1	4	64%	920,0	70,0	R2 095,00	R560,00	0	0	0	0	0	0	0
Limpopo	Willows	Reginah Pako		1	4	82%	125,0	45,0	R405,00	R405,00	0	0	7	0	0	0	0
Limpopo	Willows	Silas Malepe	1		4	82%	1052,5	592,5	R75 805,00	R10 805,00	0	10	10	30	400	0	0
Limpopo	Willows	Moses Mogofe	1		4	59%	682,0	270,0	R51 500,00	R9 000,00	49	9	4	0	0	0	0
Limpopo	Worcester	Melita Malatji		1	4	59%	682,0	270,0	R51 500,00	R9 000,00	0	0	25	0	0	0	9
Limpopo	Worcester	Madike Nkhekhe	1		4	100%	270,0	60,0	R35 000,00	R0,00	15	0	0	0	0	0	0
Limpopo	Worcester	Nuame Manaso		1	4	67%	573,0	243,0	R82 976,00	R9 976,00	12	18	28	28	0	0	0
Limpopo	Worcester	Annah Ramoshaba		1	4	77%	732,0	437,0	R19 690,00	R250,00	0	12	36	0	0	0	0
Limpopo	Sedawa	Miesie Mokwena		1	8	84%	867,0	287,0	R24 840,00	R630,70	0	6	0	10	0	0	0
Limpopo	Sedawa	Magdalena malepe		1	8	83%	920,0	465,0	R42 460,00	R42 460,00	0	0	15	30	0	60	0
Limpopo	Sedawa	Christinah Thobejane		1	8	32%	2725,0	405,0	R21 080,00	R3 650,00	0	0	0	0	0	0	0
Limpopo	Sedawa	Ronny Sekgobela	1		4	37%	1210,0	740,0	R9 500,00	R7 030,00	0	0	0	0	0	0	0
											116	65	189	151	400	60	9
			5	15	6	67%	1257,8	604,3	R36 268,25	R8 440,43	23	11	19	25	400	60	9