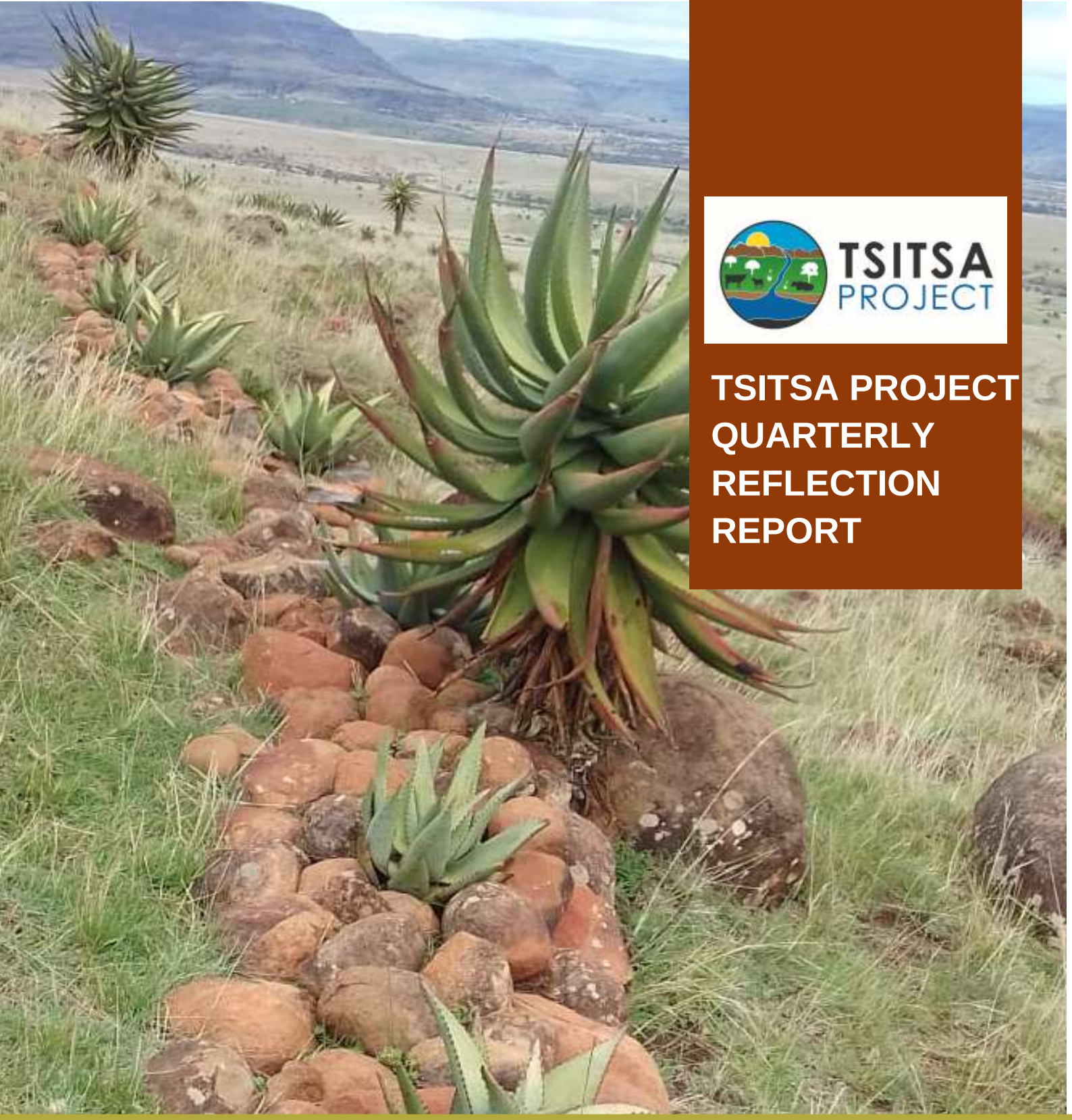

TSITSA PROJECT

TSITSA PROJECT QUARTERLY REFLECTION REPORT

Photo credit: Sibongile Nodolo

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Tsitsa Project Reflection Report Q3 2020

Karen Kotschy and Wandile Mvulane

INTRODUCTION

The Tsitsa Project (TP) is a multi-stakeholder initiative enabled by a partnership between the Department of Environment, Forestry and Fisheries (DEFF), Rhodes University (RU), LIMA Rural Development Foundation, Fort Hare University (FHU) and the University of the Free State (UFS). Stellenbosch and Wits universities are also nominally involved with student representatives. The project works with a wide range of other stakeholders including catchment residents, traditional authorities, implementers of restoration activities, municipalities, government departments and NGOs. The TP seeks to enable and support sustainable landscape management, sustainable livelihoods and the development of polycentric, participatory governance in the Tsitsa River catchment in the rural Eastern Cape of South Africa. The project is ambitious in scale and scope, and is intentionally seeking to "do things differently" in the way it approaches research, implementation and capacity building activities. A set of guiding principles has been developed to guide the project in its endeavours, and these make explicit the project's commitment to working collaboratively, reflexively, adaptively, and in a way that supports learning and social change processes.

Purpose of this report: a key process, outcome and output of PMERL

How can an organisation learn from its activities? How can it adapt its policies and practices to changing and complex contexts? How can it support its participants to do effective, impactful and enjoyable work?

The Participatory Monitoring, Evaluation, Reflection and Learning (PMERL) framework of the Tsitsa Project addresses these questions and is a core enabler of the project's intention to "do things differently".

One of the key challenges facing the leaders and advisors of the TP is the amount of documentation and knowledge being generated in the TP: collating, reading and making sense of all of this while continuing with the everyday activities of managing and running the TP is a difficult task. The PMERL team offers support to the leadership in synthesising and making sense of the outputs and processes of the TP. Moreover, the synthesised lessons and recommendations are aimed at encouraging not just the leadership but all project participants to reflect on the impact of their work, inform their planning and decision-making, and hopefully bring about an appreciation of the meaningful nature of their work. In a large and ambitious project in which many people are going 'beyond the extra mile' to contribute, this kind of motivation is important. At the same time, reflections also need to point to areas that are challenging or problematic, that need further attention or even a sharp change of direction. PMERL therefore also serves a critical purpose in building accountability and defensibility into the project by supporting rigorous and systematic analysis of evidence.

This is the third quarterly reflection report produced by the PMERL team and the final one for the 2020/21 year. It reports and reflects on the objectives, activities and events of the project over the

period September to December 2020. It offers an overview and synthesis to guide planning, decision-making, management and praxis in the TP going forward. It does not provide details on administrative and financial management.

Where are we coming from?

As part of our commitment to ensuring that recommendations and findings from previous reflection reports and workshops are used going forward, we include here key insights from the previous quarterly report (Box 1).

Box 1: Insights and feedback from the Q2 reflection process

The following lessons were identified in the Q2 report:

1. While the restrictions necessitated by COVID-19 are now easing, making work in the catchment possible again, the impacts of the pandemic will continue to be felt for some time. The Reflect and Reconnect event reminded us of the deeply painful losses suffered by some of our team members, and the difficulties around sharing such personal experiences in online meetings. We need to be aware that many catchment residents and partners in the TP may have had similar experiences. Nevertheless, several people expressed gratitude for the support and care of the team.
2. Adapting capacity development and reflection activities for an online format requires significant additional effort and even more careful focus on process design and facilitation than is needed for face-to-face events.
3. Translation skills are important in the TP for enabling more inclusive, equitable participation in events and information-sharing, and as such should be specifically developed and valued.
4. Some people are more comfortable in online spaces than others and this depends on many factors including prior experience, the type of device used, personalities, the nature of the meeting and the nature of the person's relationships with the other participants. While many people reported finding remote meetings exhausting, some found them even more enjoyable than face-to-face meetings and many noted the increased efficiency in terms of time and travel.

The following recommendations were made:

1. COVID-19 has changed the context in which the TP is being implemented. It will be important to keep track of these impacts and their implications for our work through a social-ecological systems perspective, including impacts on funding opportunities, livelihoods, wellbeing, health, governance, and the skills and capabilities needed to adapt. A reminder from last quarter: Margaret noted the need to connect with the Systems Praxis CoP about possible models to identify feedback loops, where we're at, and what are the gaps in our responses to the new context.
2. The objectives on collective action and agency (under headline objective 5) could be revised and strengthened to better foreground these issues in the work of all the CoPs and reflect their cross-cutting nature across the project.
3. The Google Earth platform developed for the project is a valuable resource and should be further showcased to the team and TP stakeholders.

Although it was not possible to hold a broader reflection event this quarter due to the proximity to the end of the year, the findings and recommendations were presented and discussed at the C-team meeting on 2 December 2020.

One of the “action items” coming out of this meeting (for action by the PMERL team) was the suggestion to include a running table of recommendations as an appendix in these reports. This could help to avoid the "segmentation of continuity" caused by having a series of quarterly reports rather than a single annual one. Harry noted that the Wisdom Trust has praised us for effectively coupling past to present to future in our reporting, so this is something we should try not to lose.

In future, the Quarterly Reflection Reports will continue to be circulated to the whole project team, and where possible mediated through reflection events, but will also be presented to the C-team to ensure stronger links into the project’s management processes. The C-team will be asked to review the recommendations and identify specific details to take these forward, i.e. what is the action, who is responsible, by when should this be done. This will be captured in a table, and the Project Coordinator (Margaret Wolff) will be responsible for communicating this to the project team, and keeping team members accountable for action items.

METHODOLOGY

Data for this report were collected from a variety of sources (Table 1).

Table 1: Sources of data and information analysed for this reflection report

CoP Reports:

- Livelihoods CoP Quarterly Report (Q3 2020)
- Sediment & Restoration CoP Quarterly Report (Q3 2020)
- Citizen Technicians’ Quarterly Report (Q23 2020)
- Grass & Fire CoP Quarterly Report (Q3 2020)
- Knowledge & Learning CoP Quarterly Report (Q3 2020)
- Governance CoP Quarterly Report (Q3 2020)
- Systems Praxis CoP Quarterly Report (Q3 2020)
- Listening and Speaking training report: Development of listening and speaking capabilities for participatory land and water governance in rural South Africa (Dec 2020)
- Report on climate change indicators for monitoring climate change adaptation in the Tsitsa River catchment (Nov 2020)
- Student Progress Report: Anthony Fry
- Student Progress Report: Megan McCarthy
- Student Progress Report: Putuma Balintulo
- Student publication: Itzkin et al. 2021

Community Engagement & Project Management Reports:

- Catchment Coordinator’s Quarterly Report (Q3 2020), including minutes of meetings with DEFF and Implementing Agents (IAs) and Back-to-Office reports
- LIMA Senior Social Facilitator’s Reflection Report (Nov 2020)
- Project Coordinator’s Quarterly Report and list of meetings attended (Q3 2020)
- Minutes of CoP Coordinators’ meetings (7 Oct, 4 Nov, 2 Dec 2020)
- Minutes of C-team meeting (9 Sep 2020)

Biophysical Monitoring Data:

- Biophysical monitoring database

The report is based on qualitative data analysis, aiming for an integrative analysis of insights and reflections on project outcomes and processes, in a process similar to that described by Bazeley

(2011). Data were analysed in two steps (Table 2). Step 1 was the first level of data filtering and analysis. The documents were divided among the two PMERL team members who read through them, making notes on insights relevant to five themes identified ahead of the process:

- Knowledge outcomes and processes
- Organisational outcomes and processes
- Social-ecological outcomes and processes
- The Tsitsa Project objectives
- Challenges experienced

This was followed by a cross-cutting synthetic analysis (Table **12**).

Table 2: Steps taken in the analysis of data

Step	Analysis activity, purpose and scope	Guiding framework
1	Reading and reflecting: to get an overview of all material and begin filtering and synthesising. Focus on each individual data source, working sequentially through the full set.	Identify a wide range of emergent themes, insights and reflections, focusing broadly on TP outcomes and processes, founding principles and objectives.
2	Cross cutting synthetic analysis: to focus the analysis and identify specific lessons and narratives relating to project outcomes and processes, founding principles and objectives. To work in an integrative manner across data sources, identifying over-arching findings.	Identify specific outcomes, allowing themes to emerge within the three categories, and then organising these more specifically into sub-categories/themes.

PROGRESS FOR THE QUARTER

Overview of activities and outputs: Sep to Dec 2020

The outputs of the Tsitsa Project for the quarter are listed in Table 3. While outputs are a useful way of capturing a snapshot of what has been produced - as evidence of the projects' activities - they give limited insight into the outcomes and learnings and the processes that enabled these. The *knowledge, organisational, and social-ecological outcomes and processes* reported below provide more nuanced insights into the work of the Tsitsa Project that draw on, reflect on, and make meaning of these outputs.

Table 3: Key outputs of the Tsitsa Project September-December 2020

Peer-reviewed publications	**In preparation:** 1. Matthew Weaver, Prof. Tally Palmer, Dr Jessica Cockburn and Nosiseko Mtati are working on a paper entitled "Transformative processes in a WEF nexus landscape: a case study of two vignettes from the Tsitsa Project" for journal submission in January 2021. 2. The Governance CoP and Systems CoP are working on a journal article for submission to Sustainability Science entitled: A Systemic View of the Governance Capabilities Pathway. This paper is in the final stages of drafting before submission in early 2021. 3. The System Praxis CoP is working with the Grass and Fire CoP to produce a manuscript around modelling. 4. The Governance CoP is working on a paper titled "Engaging society and building participatory polycentric governance for adaptive land and water management" This paper will be submitted to a Restoration Ecology Special Issue in February 2021. 5. Prof Tally Palmer is working on a paper that draws on the TP entitled "The Adaptive Systemic Approach: enabling research that supports just and sustainable natural resources development". **Published:** 1. Itzkin, A., Scholes, M.C., Clifford-Holmes, J.K., Rowntree, K., van derWaal, B. and Coetzer, K. (2021). A social-ecological systems understanding of drivers of degradation in the Tsitsa River Catchment to inform sustainable land management. Sustainability 2021, 13, 516. https://doi.org/10.3390/su13020516 2. Gwapedza, D., Nyamela, N., Hughes, D.A., Slaughter, A.R., Mantel, S.K., van der Waal, B., 2020. Prediction of sediment yield of the Inxu River catchment (South Africa) using the MUSLE. International Soil and Water Conservation Research. https://doi.org/10.1016/j.iswcr.2020.10.003
Conference and webinar presentations	1. Three presentations on aspects of the Tsitsa Project, by Eureta Rosenberg, Margaret Wolff and Nosiseko Mtati at the DEFF Annual Biodiversity Research and Evidence Indaba (8-9 Sep 2020). 2. Presentation by Nosiseko Mtati on the Tsitsa Project at the Eastern Cape Provincial Wetlands Forum (10 Sep 2020), invited by the provincial DEDEAT office. Nosi met the newly appointed project coordinator for Working for Wetlands for the Eastern Cape, who said that Eastern Cape wetlands are not mapped well in the national database. Therefore, SANBI shared that they could assist with capacity and training necessary to enable local officials to collect data about their wetlands. 3. Guest lecture by Nosiseko Mtati to the Rhodes University Department of Environmental Science honours class. 4. Guest lecture by Karen Kotschy and Wandile Mvulane on Monitoring, Evaluation and Learning in the Tsitsa Project as part of an ENV302 course module taught by Jessica Cockburn in the Department of Environmental Science at Rhodes University.
Internal project reports and outputs	**See Table 1,** PLUS: 1. Three Integrated Nodal Restoration Plans (for Hlankomo and Lower Tsitsana in sub-catchment T35A, and Elangeni in T35E). 2. Two system dynamic model interfaces for exploring relationships between Rangelands, Markets and Livelihoods and Soil Erosion, Infrastructure and Economic Development. (available on the Tsitsa Project website). 3. A system dynamics model of the linked social-ecological system (SES) drivers of land degradation and responses being considered in the Tsitsa catchment, as part of Adela Itzkin's PhD. 4. Draft research database for all student and other research in the Tsitsa catchment. 5. An outline of the historical development and innovative features of the PMERL system within the Tsitsa Project.

Visual media	1. Narrated slides and video clips which form part of the course materials for the Social Learning Facilitation and Listening & Speaking training.
Significant internal events hosted by the Tsitsa Project	1. Tsitsa Project Research-Policy Colloquium (15 Oct 2020). 2. "Power Hour" with Christo Marais from DEFF to present project progress for the year (7 Oct 2020). 3. Wisdom Trust meeting (16 Nov 2020). 4. Year end function and reflection (10 Dec 2020).
Significant external events in which TP members participated e.g. catchment learning exchanges, conferences, etc.	1. A **learning exchange between the Upper Sinxaku grazing association and livestock association members from the Matatiele region** (26 Nov 2020). Six members of the grazing association attended a cattle auction in Matatiele and interacted with the director of the "Herding for Health" programme from Conservation International. 2. Nosiseko Mtati and Bukho Gusha attended the **Umzimvubu Catchment Partnership (UCP) quarterly meeting and wetlands forum** hosted by Environmental Rural Solutions (17-19 Nov 2020). 3. Nosiseko Mtati attended the **Umngeni Ecological Infrastructure Partnership meeting** (Alien Invasive Plant Indaba). 4. Nosiseko Mtati and Margaret Wolff met with **Ivanya Yethu** who work with youth and are interested in working in the Tsitsa River catchment. They are currently fundraising in order to travel to the catchment and meet with some of the schools that Nosi has identified. We are hopeful that they will be able to form part of the larger Tsitsa Project family in future as this will add a much needed boost to the interaction with the youth in the catchment, particularly school learners. 5. Nosiseko Mtati attended the **Elundini Local Municipality IDP budget representation forum** where municipal departments presented their progress and future plans; there were also district officials. 6. Jessica Cockburn attended and contributed the Tsitsa Project as a case study for a workshop on collaborative governance hosted by the **Programme on Ecosystem Change and Society (PECS) Collaborative Management and Governance Working Group**. The workshop was focused on cross-case analysis of collaborative governance initiatives. 7. Eureta Rosenberg and Harry Biggs participated in a **writing retreat hosted by SANParks** in the Garden Route National Park. SANParks are busy with a revitalisation initiative for Strategic Adaptive Management. It turned out to be an important joint lesson-sharing event. 8. Margaret Wolff and Wandile Mvulane gave input into the "How to Bound" document being prepared by the **ARUA Resilient Benefits Project** as part of the Adaptive Strategic Approach being used by that project in five different catchments across Africa. 9. Several team members attended the **SANBI Living Catchments Project session** hosted by the Transformative Innovation Policy Consortium (20-22 Oct 2020). 10. Karen Kotschy attended two capacity development courses hosted by the **South African Monitoring & Evaluation Society** (SAMEA) (19-23 October 2020): Blue Marble Evaluation presented by Michael Quinn Patton and Mobile Data Collection using SurveyCTO presented by Ikapadata. 11. Several team members attended two webinars on Green Business and Jobs in the Post-COVID Economy hosted by **Avocado Vision** (5 and 12 November 2020). 12. Several team members attended a webinar on Building Climate Resilience through Nature-Based Solutions hosted by the **SA Adaptation Network** (24 November 2020). 13. Margaret Wolff attended a webinar hosted by the **National Business Initiative** on Unlocking Private Sector Involvement in the Green Climate Funds Project Phase 2. She submitted information on the TP. 14. Margaret Wolff accepted an invitation to be on the reference group for a **WRC project** on "Practical approaches for enabling collaborative and adaptive water management for

		catchment management agencies". The project is based in the Western Cape, but the work will be of value to the Tsitsa Project and there are opportunities for future learning exchanges with the project team.
Capacity development events hosted by the TP	1. 2.	"Listening and Speaking" training for catchment-based monitors (16-17 Sep 2020). "Training of Trainers" Social Learning Facilitation Course: Modules 1 and 2 (Oct-Dec 2020).
Students graduated	1. 2.	**Nosiseko Mtati** graduated on 16 Oct 2020 with her second Masters. **Anthony Fry** succesfully upgraded his MSc to a PhD.

Progress against TP objectives

The objectives of the TP are the key components of the project's aspirations and guide the TP team towards achieving the overall Tsitsa vision, i.e. to enable and support sustainable landscape management, sustainable livelihoods and the development of polycentric, participatory governance in the Tsitsa River catchment.

A summary of progress for the quarter is given below, with further details given in Appendix 1 (including elaboration of the objectives and sub-objectives, previous progress and progress for the quarter).

Headline Objective 1: Implement the Founding Principles

Title of objective	Progress this quarter
1.1 Social-ecological principles and resilience thinking	• Two system dynamics model interfaces uploaded to the TP website allowing interactive exploring of models of Rangelands, Markets and Livelihoods, and Soil Erosion, Infrastructure and Economic Development. • Publication from Adela Itzkin's PhD research: A social-ecological systems understanding of drivers of degradation in the Tsitsa River Catchment to inform sustainable land management. Sustainability 2021, 13, 516. • MSc Research - Megan McCarthy (A system dynamics approach to the management of Invasive Alien Plant Species in the Tsitsa River catchment area, South Africa) - causal loop diagrams and a preliminary system dynamics model. • Actor network mapping by catchment monitors as part of "Listening and Speaking" training. • Tsitsa Approach document first draft near completion; this embodies a SES approach. • TP reflection reports continue to uphold the centrality of the SES view.
1.2 Transdisciplinarity	• Ongoing synthesis across 'disciplines' through TP Quarterly Reflection reports. • Promoted by participation of all CoPs in development of the enhanced integrated restoration plans for 3 nodes (working together and looking for cross-linkages) and the Tsitsa Approach document. • Both the Listening and Speaking training and the online course "Facilitating Social Learning and Stakeholder Engagement in Natural Resource Management Contexts" value and validate a variety of types of knowledge and ways of knowing.

1.3 A collaborative, reflexive, and adaptive orientation.	• The 'Tsitsa Approach' process has been particularly valuable as it has brought the TP team together to work on a common task and has enabled cross-CoP collaboration, integration and reflexivity. • This report is the third quarterly reflection report (quarterly reporting started in 2020/21 to allow for more regular reflection and adaptation). • More CLO feedback included into data-gathering and synthesis processes. • Collaboration between CoPs on various publications (see Table 2). • The Catchment Coordinator and LIMA have continued regular meetings with DEFF Operations, GIB and Take Note for improved planning and communication. • Efforts to secure alternative funding to allow for continuity (adaptive). • Ongoing project responses to COVID-19 disruptions, particularly the efforts to help monitors to be included in online activities. • CoP Coordinators' meetings continue to be held on a monthly basis. • Annual Research Colloquium held (Oct 2020), with a stronger emphasis on linking research and policy. • Livestock auction learning exchange at Matatiele for members of the Sinxaku grazing association. • Cross-learning visits organised by vetiver growers to each others' gardens.
1.4 Expansive learning and capacity development.	• Wisdom Trust meeting held on 16 Nov 2020. • C-team met twice, in Sep and Dec 2020. • Submission of integrated nodal plans for 3 nodes to DEFF (Sep 2020). • The Tsitsa Approach (previously called the Tsitsa Project Enhanced Rehabilitation Strategy) team met 6 times between September and November. • Quarterly reflection reports by CoPs ongoing. No large reflection event held this quarter but findings of Q2 report were discussed at the C-team meeting. • Knowledge sharing and learning exchange events are being systematically captured and reported on by the PMERL team (see Table 3). • Formal capacity development is well underway with **Module 3 "Listening and Speaking" training** (Sep 2020) and **Training of Trainers online Social Learning Facilitation course** (Oct-Dec 2020). • Jessica Cockburn attended and contributed the Tsitsa Project as a case study for a workshop on collaborative governance hosted by the Programme on Ecosystem Change and Society (PECS) Collaborative Management and Governance Working Group. The workshop was focused on cross-case analysis of collaborative governance initiatives.
1.5 Polycentric governance.	• The Grass and Fire CoP together with LIMA met with the Sinxaku community to finalize the grazing agreement, sign the association constitution, and demarcate rested areas, thereby building more effective local institutions around grazing management. • The "Listening and Speaking" training was designed to equip Monitors (CLOs, CTs, CMs, and ERs) to be able to meaningfully participate in planning and decision-making processes pertaining land use, restoration and livelihood activities. • Monthly meetings with CLOs are helping the project to keep track of polycentric governance issues and progress in the catchment. • Monitoring of progress towards polycentric governance has also been built into the TP annual survey. • Ant Fry's upgrade to PhD will see him conduct an in-depth case study of governance in the Tsitsa River catchment. • Paper in progress: "Engaging society and building participatory polycentric governance for adaptive land and water management".

1.6 Towards equitable participation.	• Listening and Speaking training: "Co-listening and speaking" (the second capability) introduced ways of listening and speaking to other actors in the catchment, as well as relationship mapping to help monitors know where and how to speak and listen. • Training of Trainers online course requires participants (including many catchment monitors) to undertake a study of context and stakeholders involved in particular NRM issues relevant in their area. • Eco-rangers started with monitoring of grassland condition in rested areas in Sinxaku (a new aspect of participation in monitoring and sense-making by residents).
1.7 Scientific-technical foundation and evidence base.	• Report on climate change indicators produced. • Climate change adaptation indicators included in the TP annual survey. • CLO network mapping serves to establish a baseline for local-level governance and actor networks. • Ongoing synthesis of knowledge and evidence in this report and future quarterly reflection reports. • Two papers published and 5 in progress. • Draft database of research in the Tsitsa catchment compiled.

Headline Objective 2. Ecological Infrastructure and Services - the Biophysical

Title of objective	Progress this quarter
2.1 Functional ability of landscape.	• Research proposal completed on "Vegetation and soil recovery over time following clearing of the invasive Australian Acacias in Eastern Cape" (Putuma Balintulo, MSc). • Research underway on the implications of uncertainty associated with suspended sediment monitoring and yield estimation for catchment management decision-making (Laura Bannatyne, PhD).
2.2 Resilience (system's ability to recover).	• No progress reported.
2.3a Prioritisation and design of practices.	• The Enhanced Nodal Restoration Plans for Lower Sinxaku, Upper Sinxaku and Sigoga are being used by DEFF to guide implementation of restoration work. • Tsitsa Approach document in preparation. • A system dynamics model of the linked SES drivers of land degradation and responses being considered in the Tsitsa catchment was produced by Adela Itzkin for her PhD, based on document analysis and interviews.
2.3b Impact of practices (understand and influence land and water management practices).	• MSc Research - Megan McCarthy (A system dynamics approach to the management of Invasive Alien Plant Species in the Tsitsa River catchment area, South Africa) - causal loop diagrams and a preliminary system dynamics model. • Grazing agreement finalised for Sinxaku, constitution signed and rested areas demarcated (2/4 camps to be rested, about 100 ha out of about 480 ha, to be rested from 1 Dec -1 June). • Monitoring of grassland condition in rested grazing camps by Eco-Rangers. • Nosi Mtati attended the Elundini Local Municipality IDP budget representation forum. • Mike Coleman offered possible links into Elundini Municipality at the Wisdom Trust meeting.

2.4 Monitoring.	• The signing of the grazing agreements enabled the team to be able to start measuring some biophysical attributes of the rangeland. Monitoring of the standing biomass and vegetation cover has already started in the areas that are currently rested in Upper Sinxaku. • Nosi Mtati's completed MSc thesis ("Towards realising the benefits of citizen participation in environmental monitoring: A case studyin an Eastern Cape Natural Resource Management Programme") makes an important contribution to understanding of the benefits of citizen monitoring, with implications for NRM projects nationally. • The PMERL team liaised with Prof. Kate Rowntree around her proposed climate change and climate change adaptation indicators. Some aspects will be monitored more frequently by monitors on the ground, while others have been included into the TP survey. • Development of TP Annual Social and Livelihoods Survey. • Rainfall database updated to August 2020 with the data and information gathered during Nick Huchzermeyer's field visit last quarter. • River discharge and velocity database updated to August 2020. • Biophysical monitoring database updated. • Interactive maps available on the website.

Headline Objective 3. Livelihoods and well-being

Title of objective	Progress this quarter
3.1 Livelihood strategies.	• TP annual survey designed to capture information on livelihood strategies of local households and links to ecological systems, wellbeing and vulnerability over time, as well as human, physical, social, financial and natural capitals and formal and informal institutional arrangements and processes. • Report on climate change adaptation indicators completed.
3.2 Aspirations and opportunities.	• Ongoing discussions around a charcoal production business opportunity with Avocado Vision and LIMA. • Learning exchange for Sinxaku grazing association members to a cattle auction in Matatiele. • Research underway on citizen understanding and values ascribed to ecological infrastructure (Anele Ntshangase, MSc).
3.3 Participatory planning.	• Residents from Sinxaku requested a process to revise/update their participatory village-level plans. • The Tsitsa Approach document outlines how participatory planning has been and can be done.
3.4 Integration.	• Vetiver gardens doing well and have had good rains. Green-preneurs sold another 3000 plugs to the GEF5 group and GIB will be continuing buying plugs. • Two Green-preneur SMME members were selected (4 applied) to take part in training at the Green Enterprise Incubator in Matatiele, starting Dec 2020. • Tensions arose within the SMME.
3.5 Monitoring and Evaluation (of well-being and capability).	• TP annual survey designed to capture information on capability expansion around green livelihoods, including agency, wellbeing and capability.

Headline Objective 4. Institutional Actors and Governance

Title of objective	Progress this quarter
4.1 Current and desired governance arrangements.	• A-team (Strategic Oversight Committee) intended to promote networking with higher echelons of government but has only met twice. • There are concerns about the structure of the C-team going into 2021 due to the busy schedules of many of its members. • Research in progress on "Leverage Points for Improved Participation in Rural Land and Water Governance" (Ant Fry, MSc).

	• CLO network mapping serves to establish a baseline for local-level governance and actor networks and a starting point for local interventions.
4.2 Political ecology/economy.	• CLOs are starting to report on the local political ecology in the catchment.
4.3 Internal governance and management of overall expanding scope of the Tsitsa Project.	• The Wisdom Trust meeting addressed issues of scope. • Several partnerships were explored or strengthened (see Table 3). • The Tsitsa Approach document contains key insights around managing scope and methods for doing so, including our "bounding and identity diagram", use of systemic thinking techniques, comparative risk assessment, and the vital attributes step in strategic adaptive management.
4.4 Project-related ethics.	• Protocols for visiting researchers discussed at C-team meeting in Sep 2020. C-team to approve all proposals in consultation with the Catchment Coordinator and LIMA. • Document in preparation for internal use on how we work together in an ethical and respectful way regarding publications, and the use of PMERL reflections as research data.

Headline Objective 5. Realising Agency and Collective Action

Title of objective	Progress this quarter
5.1 Principles.	• See under Objective 1 – Towards equitable participation. • Developing agency and collective action is a key intention of the Listening and Speaking and the Training of Trainers courses. • Research in progress on leverage points for improved participation in rural land and water governance (Ant Fry, PhD). • The TP annual survey will collect information on equity.
5.2 Prototype (pilot) projects that exemplify this goal.	• Vetiver gardens doing well and have had good rains. Green-preneurs sold another 3000 plugs to the GEF5 group and GIB will be continuing buying plugs. • 2 Green-preneur SMME members were selected (4 applied) to take part in training at the Green Enterprise Incubator in Matatiele, starting Dec 2020. • Tensions arose within the SMME. • Meeting with Ivanya Yethu who work with youth and are interested in working in the Tsitsa River catchment. We are hopeful that they will be able to form part of the larger Tsitsa Project family in future as this will add a much needed boost to the interaction with the youth in the catchment, particularly school learners.

Headline Objective 6. Knowledge Flow, Communication and Advocacy

Title of objective	Progress this quarter
6.1 Scientific-technical databases, libraries and decision support systems.	• Two system dynamics model interfaces uploaded to the TP website allowing interactive exploring of models of Rangelands, Markets and Livelihoods, and Soil Erosion, Infrastructure and Economic Development. • Interactive maps on stakeholder analysis, woody vegetation, wetlands, status of cultivated land and prioritised alien vegetation available on the website. • Links to reports and publications available on the website. • Draft database compiled of research in the Tsitsa catchment.
6.2 Community strategies.	• The TP annual survey will collect information on awareness and reach of the TP.

6.3 Lobbying/Advocacy.	• "Power hour" to share project progress with Christo Marais from DEFF (Oct 2020). • Margaret Wolff continues to play an important communication and advocacy role, through the relationships she has built and is building with other organisations and people. • The TP team attended a broad range of events with external partner organisations (see Table 3) - this builds networks and helps to identify opportunities. • Presentations at the 2020 Annual Biodiversity Research and Evidence Indaba: the challenges of working in a complex space regarding planning and funders – although we talk about cooperation and integration the system in which we work is not conducive to it. • It was noted at the Wisdom Trust meeting that sharing useful aspects of the TP approach can take place strongly through the 'community of practice' emerging through the widely attended online Training of Trainers course, and that we should consider strengthening such wider networks as a primary route for out scaling and upscaling. • Funding proposals submitted to DEFF and several other funders.

Indicator data

An important development this quarter was the drafting of the Annual Tsitsa Project Social and Livelihoods Survey. The PMERL team coordinated a working group to integrate the different survey instruments that have been or are being used in the TP (livelihoods, grazing, social indicators, climate change indicators). The idea behind this consolidation was to avoid having too many different people asking residents similar questions in different surveys. The survey was then put onto the mWater platform (https://www.mwater.co) for testing and review. The mWater platform is already in use by the Citizen Monitors and Eco-Rangers and holds great potential for collection, analysis and sharing of data in the TP as it can be used for mobile data collection, is completely free, and provides assistance with monitoring of SDG indicators.

The survey has been designed to capture information on livelihood strategies of local households, wellbeing and vulnerability, gender issues, natural resource access and use, climate change adaptation, livestock, and formal and informal governance arrangements and processes. It is designed to provide data for all the social indicators selected for the Tsitsa Project as well as for focused research on aspects such as grazing management, climate change adaptation and participatory governance. The survey will be administered by the CLOs and Citizen Monitors in February 2021 (the latter already have experience in administering the previous livelihoods survey).

Since the survey has not yet been administered, only biophysical indicator data can be reported here. Although data for grassland condition, suspended sediment and dry season baseflow have been collected, analysis of these data to distill them into the form required by the indicators is not yet complete. Therefore, only data on water quality can be presented in this report.

Table 2: Biophysical indicators for the Tsitsa Project

Indicator	Results 2019	Results 2020
Healthy ecosystems - Alien woody cover	13917 ha (uncondensed area) - dominated by silver, black and green wattle followed by Eucalyptus and poplars) [Huchzermeyer, 2018]	No data available
Healthy ecosystems - Grassland condition	Of 8 monitoring sites: • Veld condition score: 2 sites in moderate condition, 4 sites in poor condition and 2 sites in very poor condition. • Grazing capacity: 2 sites with moderate capacity, 6 sites with poor capacity.	Some data collected but analysis not yet available
Healthy ecosystems - Suspended sediment	• The highest suspended sediment concentrations are found in the northern part of the catchment and particularly in the Gqukunqa River in T35E (measured SSC). • The small Tsitsana and Hlankomo catchments, and the Inxu and Gqukunqa catchments, contribute large amounts of suspended sediment relative to their size (tracer studies).	Analysis of sediment concentration data not yet available
Healthy ecosystems - Dry season baseflow	Observed baseflows since 2015 have mostly been below the Environmental Flows requirement (benchmark) for drought conditions (1.6 $m^3.s^{-1}$), and considerably below the maintenance year baseflow requirement (4.3 $m^3.s^{-1}$). [DWS data 1952-2020]	Analysis of flow data not yet available
Healthy ecosystems - Landscape function	No data available.	No data available
Healthy ecosystems - River health	Of 11 monitoring sites: 4 sites in good condition, 2 sites in fair condition, 3 sites in poor condition and 2 sites in very poor condition (SASS v5 data).	Of 11 monitoring sites: 1 site in good condition, 3 sites in fair condition, 4 sites in poor condition and 3 sites in very poor condition (based on SASS v5 data).

Biophysical indicator data (rainfall data, river discharge and velocity data, and water quality data) were collected by Nick Huchzermeyer during a field trip in August 2020 and used to update the rainfall database, river discharge database and the biophysical monitoring database.

The Citizen Technicians continued with their suspended sediment sampling and were kept extremely busy with flood sampling due to the onset of good rains from October (slightly earlier than ususal). COVID-related travel restrictions precluded the field technician, Zanele Mase, from organizing routine visits to the catchment to deliver consumables (empty jars, and crates, chlorine pills, stationery, etc.), perform quality control CT sampling protocols and data capture, and, vitally, to download stored data, time and sample information from the CTs phones, without which the task of data analysis is difficult to impossible. Zanele and field assistant Landile Mtate were finally able to travel to the catchment in November to collect data, replace three phones and engage with the Citizen Technicians. The assistance of Chris Jackson and Siphakamise Ngobhane (LIMA) with the phone replacement and other CT support activities was greatly appreciated.

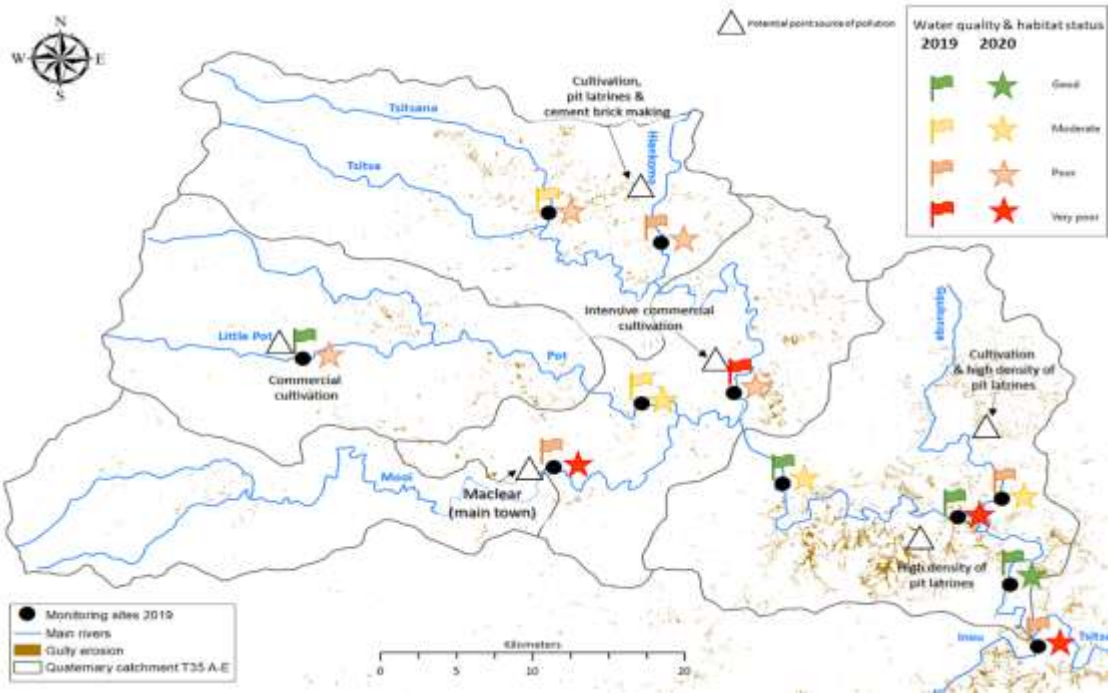

Figure 1: River health monitoring sites in Catchment T35 A-E showing water quality and habitat status (based on SASSv5 results) at monitoring sites in 2019 & 2020

Water quality was assessed at the sites established in 2019, using the same methods, providing a comparison across years (Table 2 and Figure 1; see Huchzermeyer *et al.* 2019 for methods). The data show that water quality in general declined between 2019 and 2020, with only one site remaining in good condition in 2020. The biggest change (from "good" to "very poor") was recorded in the lower part of the catchment where there is a high density of pit latrines. Intensive cultivation also appears to have negatively affected water quality at several sites.

The Eco-Rangers started to monitor standing biomass and vegetation cover in the areas that are currently being rested under the new grazing agreement in Upper Sinxaku, with support from LIMA (Figure 2).

Figure 2: Left - Ecoranger assisting with estimating standing biomass using a Disk Pasture Meter; Right - A 50m transect used to estimate vegetation cover in a rested camp in Upper Sinxaku.

SYNTHESIS OF OUTCOMES, PROCESSES AND LEARNING

In this section we present the **knowledge**, **organisational** and **social-ecological outcomes** of the Tsitsa Project for the quarter, and also focus on noting important processes and learning taking place.

Knowledge outcomes and processes

This section highlights what is new and what it means for our understanding of the social-ecological system in which we operate - the Tsitsa catchment and the broader governance and institutional context. It also captures important knowledge-sharing and knowledge-generation processes and notes enablers and constraints to these.

The Tsitsa Approach document

The project team spent much time this quarter working together on a document describing "the Tsitsa approach" to enhanced catchment restoration[1]. This important document extends and generalises the integrated approach described in the three nodal restoration plans submitted to DEFF in September (described in last quarter's report, now being used by DEFF to guide the work done by implementing agencies). It describes the learnings, approach and recommendations for engaged research based on our experiences in the Tsitsa river catchment since 2015. This document is considered key for sharing and replicating the kind of catchment-level intervention that is able to bring about long-term improvements in livelihoods and resilience, and its development was recommended by the Wisdom Trust in January 2020. It is likely to be a useful document, not only for the Tsitsa Project but for the Department of Environment, Forestry and Fisheries and other stakeholders.

The process of developing the document has been particularly valuable as it has brought the TP team together to work on a common task and has enabled cross-CoP collaboration, integration and reflexivity. This has supported the TP principles of collaboration, transdisciplinarity and learning. The Tsitsa Approach team met six times between September and November and managed to work very well together online. The experience of working together on the Integrated Nodal Plans made working together on the Tsitsa Approach easier (from a technical point of view) but there were still many aspects of the document that needed multiple meetings and discussion in order for the team to agree on the layout of the document.

Systems Praxis Models

Two models from the System Praxis CoP have now been embedded on the website. These allow for interactive exploration of the systemic connections between between Rangelands, Markets and Livelihoods and Soil Erosion, Infrastructure and Economic Development in the Tsitsa catchment. Readers are encouraged to explore these engaging and innovative models (see Figure 3 for a sample)!

[1] previously called the Tsitsa Project Enhanced Rehabilitation Strategy

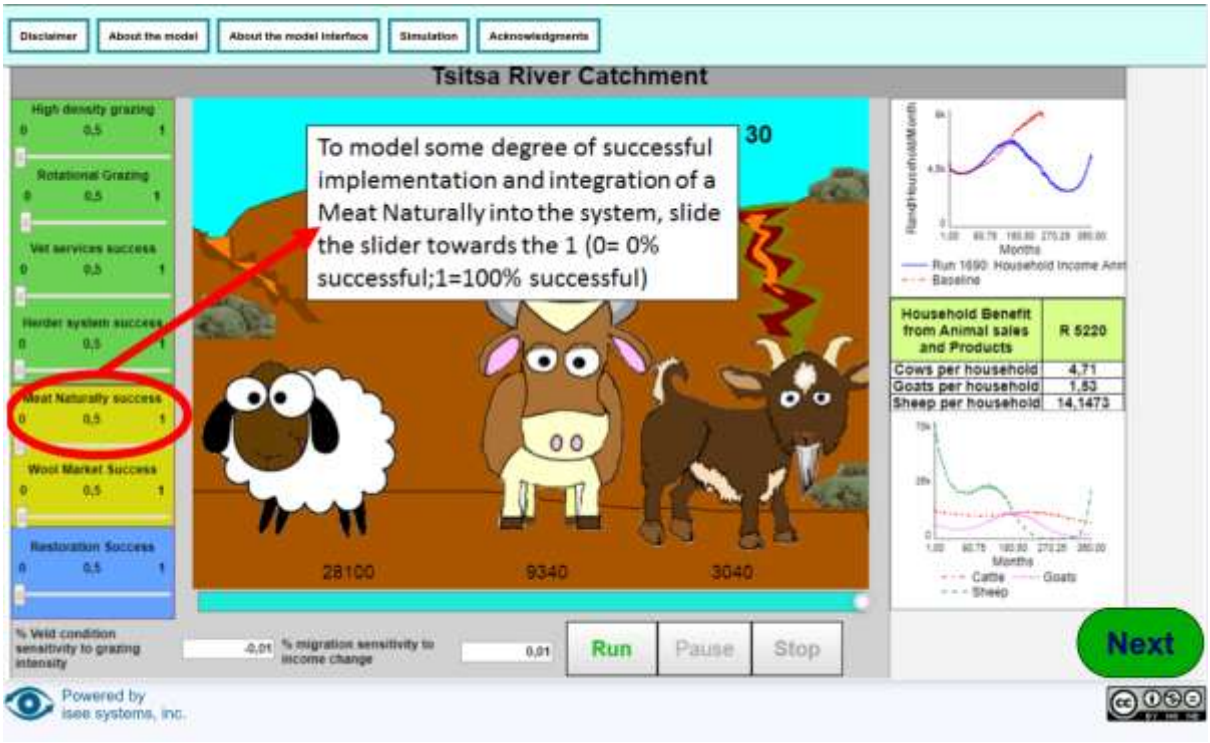

Figure 3: Screenshot of the Rangelands, Markets and Livelihoods model interface.

Knowledge sharing opportunities

The TP continues to use available technology and online platforms as primary modes of communication for knowledge sharing events and processes as the impacts of COVID-19 continue to be felt across the country.

As can be seen from Table 3, members of the Tsitsa team attended multiple external learning events and knowledge sharing opportunities this quarter. Highlights included:

- The Tsitsa Project Research-Policy Colloquium held online on 15 Oct 2020. This event is a platform for Tsitsa Project affiliated students and researcher to showcase and share their work with the wider project and its stakeholders. The focus of the colloquium shifted to consider the research-policy interface and how the work that students are doing can be used by policy makers or to write policy briefs. The idea of this shift began after the colloquium in 2019 and was reinforced after the 2020 Annual Biodiversity Research and Evidence Indaba. One of the benefits of working via Zoom this year was wider range of researchers and colleagues who were able to join the meeting, which did not happen in the past unless the student presentations formed part of the Science-Management meeting.
- It was pleasing to note several learning exchanges in the catchment after the months of lockdown, particularly those involving catchment residents (see further details under Social-Ecological Outcomes). Project staff also took the opportunity to attend the quarterly meetings of the Umzimvubu Catchment Partnership (UCP) and the Umngeni Ecological Infrastructure Partnership meeting, important catchment-based learning partners.

- Guest lectures by the PMERL team and the Catchment Coordinator for the Department of Environmental Science at Rhodes University were also a useful learning and sharing opportunity this quarter.
- Jessica Cockburn attended and contributed the Tsitsa Project as a case study for a workshop on collaborative governance hosted by the Programme on Ecosystem Change and Society (PECS) Collaborative Management and Governance Working Group. The workshop was focused on cross-case analysis of collaborative governance initiatives from around the world.
- Eureta Rosenberg and Harry Biggs participated in a writing retreat hosted by SANParks in the Garden Route National Park. SANParks are busy with a revitalisation initiative for Strategic Adaptive Management. It turned out to be an important joint lesson-sharing event.
- Several team members attended the SANBI Living Catchments Project session hosted by the Transformative Innovation Policy Consortium (20-22 Oct 2020).
- Tsitsa team members made three presentations on aspects of the Tsitsa Project, by Eureta Rosenberg, Margaret Wolff and Nosiseko Mtati at the DEFF Annual Biodiversity Research and Evidence Indaba (8-9 Sep 2020).
- Presentation by Nosiseko Mtati on the Tsitsa Project at the Eastern Cape Provincial Wetlands Forum (10 Sep 2020), invited by the provincial DEDEAT office. Nosi met the newly appointed project coordinator for Working for Wetlands for the Eastern Cape, who said that Eastern Cape wetlands are not mapped well in the national database. Therefore, SANBI shared that they could assist with capacity and training necessary to enable local officials to collect data about their wetlands.
- Margaret Wolff, Wandile Mvulane and Bukho Gusha provided input into the "How to Bound" document being prepared by the ARUA Resilient Benefits Project as part of the Adaptive Strategic Approach being used in five different catchments across Africa. The Tsitsa Project is a learning site for this project and, while there are not necessarily financial benefits, the networks and linkages that can be made are important.

Many of the knowledge-sharing and learning opportunities mentioned above and in Table 3 also served the purpose of advocacy for the Tsitsa Project (see Headline Objective 6: Knowledge Flow, Communication and Advocacy).

Another interesting development this quarter was the application of the Citizen Technicians model developed through the Tsitsa Project in the uMzimkhulu River catchment. Laura Bannatyne interacted with consultants from the consulting firm REH who are involved with developing a small hydroelectric power plant and need to track sediment characteristics, dynamics and volumes in a remote, data-scarce area. She shared the Citizen Technicians Guideline, training material and admin support documents and protocols. REH has now appointed citizen technicians and the process is going well so far. The consultants have agreed to keep notes documenting the process and any challenges they encounter, which will be captured in a co-authored publication. This is a useful opportunity to add to South Africa's suspended sediment database which is, apart from the Tsitsa catchment, virtually non-existent at this stage.

Student research

- Adela Itzkin published a paper as part of her PhD research entitled "A Social-Ecological Systems Understanding of Drivers of Degradation in the Tsitsa River Catchment to Inform Sustainable Land Management". The paper used a system diagramming approach coupled with findings from interviews, workshops, literature, and two conceptual frameworks. Data inputs were qualitatively integrated to provide a systemic snapshot of how the context-specific social and biophysical drivers are interlinked and how they interact, revealing multiple processes that operate simultaneously to cause and exacerbate land degradation. Physical and climatic variables, changes in land use and cover, and overgrazing were identified as key factors leading to degradation. Additionally, poverty and disempowerment were also important. While little can be done to influence the physical aspects (steep topography and duplex soils) and climatic variables (extreme rainfall and drought), carefully planned changes in land use and management could produce dual-benefits for improving landscape conditions and sustainable livelihoods. The system dynamics model produced by Adela can be used to help researchers and practitioners to explore the interconnections between different drivers and the relative effectiveness of various intervention options. Adela's PhD is registered at the University of the Witwatersrand and is co-supervised by Prof. Mary Scholes, Dr Kaera Coetser (both from Wits) and Jai Clifford-Holmes.
- Megan McCarthy's Masters research (Stellenbosch University, co-supervised by Prof. Josephine Musango from Stellenbosch and Jai Clifford-Holmes) provides a systemic analysis of the management of Invasive Alien Plants in the Tsitsa River Catchment and uses system dynamics modelling. By providing a systemic analysis of the Green Ventures charcoal production pilot project (driven by LIMA, DEFF, Avocado Vision and partners) within the Lower Tsitsana node of the Tsitsa River Catchment, Megan's system dynamics model and thesis will aim to be useful not just to the Tsitsa Project, but to the broader Extended Public Works Programmes (EPWP).
- Ant Fry's Masters (co-supervised by Tally and Jai) aims to identify leverage points to practically support the emergence of participatory land and water governance in the Tsitsa catchment. Ant presented his work in an innovative format this quarter, through the three-minute thesis competition run by the Centre for Postgraduate Studies at Rhodes University. See https://www.youtube.com/watch?v=xtPaMQAd6So
- Putuma Balintulo completed her MSc research proposal on "Vegetation and soil recovery over time following clearing of the invasive Australian Acacias in Eastern Cape". This work will be of value in understanding how to monitor and evaluate "successful restoration" in a more rigorous way.
- Laura Bannatyne is in the final stages of writing up her PhD, which builds understanding of the implications of uncertainty associated with suspended sediment monitoring and yield estimation for catchment management decision-making.
- Research by Anele Ntshangase is also underway on citizen understanding and values ascribed to ecological infrastructure (MSc), although temporarily on hold due to personal reasons.

Capacity development courses

Both the "Listening and Speaking" training and the online course "Facilitating Social Learning and Stakeholder Engagement in Natural Resource Management Contexts" run this quarter value and validate a variety of types of knowledge and ways of knowing.

"Training of Trainers" Social Learning Facilitation Course

The Training of Trainers online course kicked off on 5 October with Module 1, with Module 2 running from 16 November until 18 December 2020. This course is being attended by a wide range of participants from across the country, involved in many different types of natural resource management activities and with a variety of different types of knowledge and experience. It includes 23 participants from the Tsitsa Project, 13 of whom are catchment monitors and three of whom are students. The course requires participants to undertake a study of context (Module 1) and stakeholders (Module 2) involved in particular NRM issues relevant in their area, and to apply these to the design (Module 3) and implementation (Module 4) of a chosen NRM issue in their area or relevant to their work. The course is intended to promote individual and collective agency and work-relevant learning.

"Listening and Speaking" training

The "Listening and Speaking" training (Module 3 of the Monitors' Capacity Development Course) was held on 16-17 September 2020 (Figure 4). It was designed to equip the catchment-based monitors (CLOs, CTs, CMs, and ERs) to be able to meaningfully participate in planning and decision-making processes pertaining land use, restoration and livelihood activities. "Co-listening and speaking" is the second capability in the Capabilities Pathway. This workshop introduced ways of listening and speaking to other actors in the catchment, practical skills such as minute-taking, running effective meetings and participant observation, as well as relationship mapping, to help monitors know where and how to speak and listen (Libala *et al.* 2020).

The actor network diagrams produced by participants provided important baseline information on local-level relationships and project-related networks. Diagrams produced by small groups were combined using Gephi software to produce an overall relationship map (Figure 5).

Figure 4: Listening and Speaking training, Maclear, 16 Sep 2020

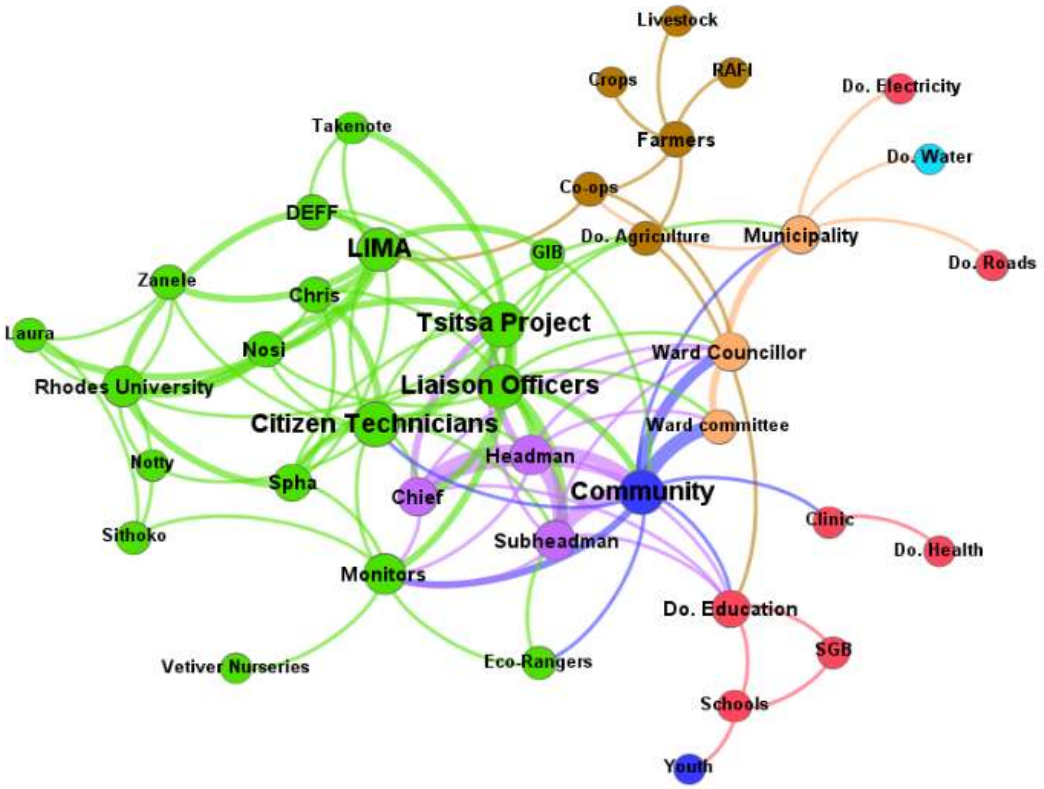

Figure 5: Combined relationship map showing the combined input of the five groups. The bigger, more central actors are better connected and central to this network as they were mentioned many times. The smaller actors on the edges of the network are seen as more peripheral as they were only mentioned by one or two groups.

Both courses have produced significant learning for the Tsitsa team on running online and partly online (blended) training events and processes, and on how to overcome the logistical and technological difficulties sometimes associated with working in remote rural areas (see Figure 7 and Figure 6).

Some of the main challenges for the ToT course have been network connectivity in remote rural areas, and language. Innovations to provide extra support have included translating the core content, sharing material via WhatsApp to reduce dependency on website access, and pooling tutorship resources across groups. Unfortunately one of results of these challenges has been that tutorship sessions for the catchment monitors are often more about logistics and access than about the course content. Producing content has also been more work than anticipated, given that the team is producing the content from scratch and the contributors are all quite busy, so getting materials ready on time has been a challenge.

However, in general there is a realisation that online meeting and learning programmes will probably need to remain part of our thinking and planning for the immediate future.

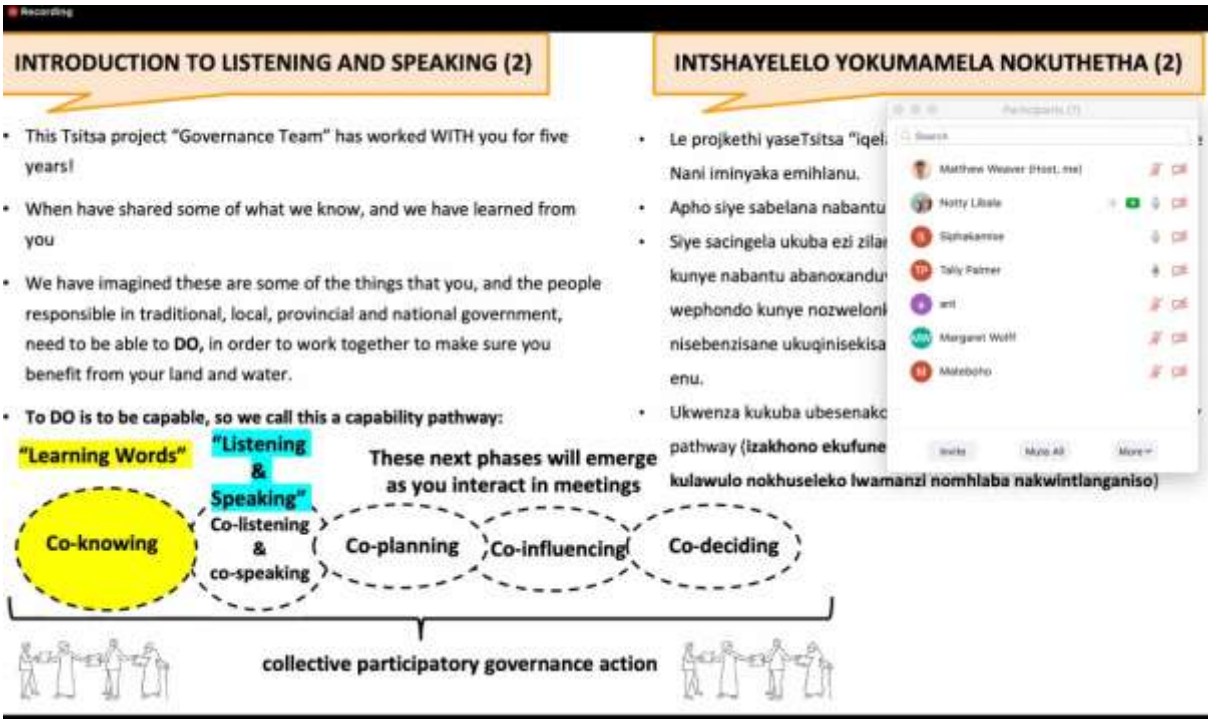

Figure 7: Introductory slide from the Listening and Speaking training being presented in two languages by Prof Tally Palmer and Notiswa Libala

Figure 6: Learning to learn online - the Tsitsa team using blended learning and Zoom to effectively combine virtual and in-person participation during the Listening and Speaking training course

Organisational outcomes and processes

The TP remains flexible and adaptative to the changing conditions as a result of the pandemic, human resource capacity and funding. Certain changes are expected with regards to the compositions of CoPs – for example the Governance CoP is expected to merge with the KL CoP in the 2021/22 financial year, as a result of the changes in the leadership and human resources available in the current Governance CoP.

After deliberation with Harry Biggs, the Project Coordinator decided it would be important to set up a meeting with the Tsitsa Project Wisdom Trust to give a quick update and allow time for discussion, given the lockdown and all the ups and downs of 2020. The meeting was short and again, because it was online, the attendance was good and we met two members who have not joined the meetings in the past because they were either unable to make the dates or to travel. The summary notes produced by Harry Biggs are included here almost verbatim as they highlight several important issues, opportunities and gaps:

The first question asked exposed, once again, how relatively little we have achieved so far in terms of engaging with the block of "commercial' farmers, particularly regarding existing or potential interactions between them and the "communal" block. The team described some early activities conducted with "commercial" farmers. We are aware of this shortcoming and plan to bridge it over time, knowing that Paul Hebinck and Michael Aliber are potential allies. A Tsitsa finding is that emerging farmers have less connectivity to land and to commercial networks.

Regarding what the team does to avoid being overrun by the magnitude and multiple dimensions of the Project, we described various focussing and partner allocation tools in use (such as, inter alia, our home baked "bounding and identity diagram", use of systemic thinking techniques, comparative risk assessment, and the vital attributes step in strategic adaptive management). A key insight in the forthcoming "Tsitsa Approach to Enhanced Catchment Rehabilitation" concerns this exact issue.

From the presentations, it seemed to members that we had good networking with "communal" land users per se, but it is not clear whether this effective networking extends upwards adequately to higher echelons of government, for instance. This point was raised again in various ways during the meeting and the team explained that in fact potentially effective allowance had been made in our institutional arrangements, for instance particularly via the "A-team". Intended as annual since formation in 2018, this structure has only met twice, with some effect (the dam had originally been the real magnet, we learnt). The current "A-team" chair, indicated that if we cannot revive this effectively in 2021, we stand to lose a lot of the gains previously made.

A common theme concerned the fact that we should not only see ourselves as Tsitsa in that geographical context, but also as potentially carrying out an ambitious experiment for an alternative mode (more generally) of carrying out restoration and sustainable land management in a livelihoods-centred way, and that that "bigger picture" eclipses our "just Tsitsa" identity. Along with that obligation, we have to realise the policy folk and practitioners elsewhere are invariably impatient for what they see as "hard outcomes" or "impacts", coming also as they mostly do, from a more mechanistic "boots and bakkies" (and often outsiders' boots and bakkies) approach to rehabilitation. So while we carry the "it takes time" message so strongly, they may lose interest. Another "switch off" for them is the scientific and technical language and all the theory that we often use. We are crucially

aware of these tensions, and attempting to strike the best balance we can come up with in the "Tsitsa Approach to Enhanced Catchment Rehabilitation" and elsewhere. In fact, a quick internal de-briefing after the meeting came up with the obvious idea that this committee, or some members at least, could assist us, with their experience, at finding an appropriate pitch.

Team perspectives on the above hard/soft and quick/slow issue, include the strong belief that strengthened capacity and agency in community members (and more widely in the wider "bigger picture" community in South Africa, as elegantly demonstrated by the heavily subscribed online Training of Trainers course currently being run) is itself already a "hard outcome" (?) of a kind, since it surely acts as a prerequisite to any sustainable basis for rehabilitation. But it's fine if we want instead to rephrase that type of outcome as "soft", but certainly as a key underlying foundation for achieving what we want. Equally, consider concrete improvements in community voice influencing decisions about where and how restoration takes place, and consider how local people (community liaison officers) are now strongly represented in land and water governance meetings. And simply finding (even stumbling on) an effective way, though all this, to sustain intrinsic motivation for this overall ethos and its requirements for practical ongoing use in the community, would achieve a desirable emergence few would not badly want. Also, the team does feel there is an important difference between only being able to get from A->B via a squiggly line, and creating the impression we are getting nowhere. Anyone thinking they can get from A->B in a straight line in a complex SES, needs to consider that those who work regularly in such systems are reiterating the unlikelihood of that. We have to deal with all these tensions described above in the document. Regarding our value proposition in the Enhanced Rehab document, one member suggested we explain explicitly what sets our approach apart – he thought one slant was perhaps "learning from people".

The relative under-representation in the two presentations, of grass and fire CoP results, was detected by members, who saw this theme as critical because these are drivers of degradation that can be influenced by us. The Grass and Fire CoP is, for reasons we berate, a relatively new (i.e. a late starter) in Tsitsa, and the team was able to then mention much institutional progress (e.g. formation of several grazing associations) since inception, and announce there is now base data about stock ownership and use. There was a side-discussion on the Chat re several other Grass-Fire issues including the GSSA's Briske Webinar on 26 Nov on impressions after 40 Years of Holistic Grazing.

Other interesting issues touched on included: constraints [and possibilities of influencing these] in the government domain, such as contractual processes of the EPWP teams, procurement challenges, and conventional rigid M&E systems e.g. possibility of complementing them with participatory evaluation and citizen monitoring; the possibility of mind set shifts generally from the notion that research and praxis are just features of the early phase of a project, then fall away – this is not consistent with the idea of effectively managing a dynamic complex SES.

Three useful other offers arose – potential collaboration with SANParks, given the planned new and different National Park and surrounds; Mike Coleman offering possible links into Elundini Municipality; and a request to contribute a case history to a technical report of UNCCD's Science-Policy Interface

Overall, we were generally encouraged by comments about our overall progress over the Project period, trying at the same time to be aware of our shortcomings, and more cognisant of barriers and how we might overcome them. I mentioned to the members that several of 2020's main products were strongly influenced by the previous Wisdom Trust meeting's recommendations, in particular the

currently mid-draft "Tsitsa Approach to Enhanced Catchment Rehabilitation". One member eloquently voiced the concern that we all have – can such an experience and its lessons be effectively "up scaled" and how, given all the context specificities and other complexity? Given the 'community of practice' emerging during widely attended online Training of Trainers course, which was not even initially intended to be an online course, we may have 'accidentally' discovered that sharing useful aspects of our approach takes place strongly in this way, and should possibly consider strengthening such wider networks as a primary route for out scaling and upscaling.

Regarding internal project governance, there are concerns about the structure of the C-team going into 2021 due to the busy schedules of many of the members. The Project Coordinator feels that the C-team is an important platform and supports her in internal decision making.

Margaret Wolff, Sarah Polonsky (DEFF contract manager) and Chris Jackson (LIMA) continued to meet once a month whenever possible during this busy quarter, to provide feedback and discuss concerns about the project, but also as a way to build relationships. These meetings have led to Margaret feeling comfortable to email or message Sarah if there are issues that needed to be resolved.

One of the major organisational issues for the near future is the impending end of the current DEFF funding cycle in March 2021 and the resulting uncertainty over the future funding and governance arrangements. Various project team members have been hard at work submitting funding proposals to support future work in the catchment.

The DEFF bid call for the next three-year funding cycle came out on 20 November and the Tsitsa team immediately sprang into action and met three times between 25 November and 4 December to work together on the bid proposal. There was a crazy spurt of emails back and forth between the team in between the tight meeting schedule. One team member commented: "It was wonderful to watch the team working on a Google Document together in one of the meetings. It was staggering to watch everyone jump online and get involved putting comments and text on the document. I was suitably impressed by the flurry of activity." Margaret Wolff pulled all the inputs together, consolidated the budget, dealt with all the administrative details, and submitted the bid in time with assistance from Nosi Mtati and Cindy Kepe – thereby earning hero status!

During this reporting period, Rhodes University secured two small additional sources of income for the Tsitsa Project. One is the appointment as convenor of one of four SANBI Living Catchments Projects together with Environmental Rural Solutions (ERS) based in Matatiele. An exciting spin-off of this is the proposal that Nosi Mtati and Tsoanelo Shata (ERS) run the project with support from ERS and the Tsitsa Project Coordinator. This will give these two young, extremely capable women an opportunity to learn and grow in the field they are both already working in.

The UN Environmental Programs – Small Scale Funding Agreement (UNEP-SSFA) project (November 2020 to March 2021) will be run by Dr Ayanda Sigwela and will be based in Mount Fletcher. This is another opportunity to share lessons and to bring the Upper Mzimvubu work more into focus not only between Maclear, Mount Fletcher and Matatiele but into the broader landscape of catchment work particularly as we head towards the UN Decade of Ecosystem Restoration. In the process of getting all the paperwork signed for the project, Rhodes University was listed as a service provider to the UNEP making it potentially easier for project proposals to be considered in future.

Turning to governance arrangement in the catchment, an exciting development this quarter was the start of more detailed reporting by the CLOs on their activities and their contribution to understanding local governance issues and the political ecology of the catchment. These reports included issues related to leadership, trust, access to general meetings, frequency of meetings, residents' clashes over the use of natural resources, miscommunication and stock theft. Stock theft has become a major problem in the area recently, leading to tensions and mistrust, and farmers are reticent to share information on stock numbers.

Some of the activities in which CLOs took part this quarter were:

- Attending Traditional Council meetings
- Attending Farmers' Association meetings
- Other meetings, such as an SAPS meeting and a meeting about wattle harvesting
- Assisting GIB in recruiting six herders to keep cattle away from restoration sites
- Sharing updates about the Tsitsa Project

The meetings held between the CLOs, LIMA and TP team members are important because they provide an opportunity to talk through issues and deliberate appropriate responses. However, it has been difficult to hold these meetings remotely because of poor network in some of the areas.

Other important organisational outcomes were the signing of the grazing agreement and formation of the livestock association in Upper Sinxaku Village, and the setup of the SMME by the green-preneurs. These are covered in detail in the following section.

Social-ecological outcomes and processes

Key social-ecological outcomes this quarter were linked to sustainable land management and livelihoods.

Livestock associations and grazing agreements

A grazing agreement has been signed and a livestock association formalised in the Upper Sinxaku Village. Four camps are being used as part of the grazing agreement, of which two will be grazed and the other two rested (about 100 ha out of about 480 ha, to be rested from 1 Dec to 1 June). This has enabled the team of community monitors (Eco-Rangers) to start measuring some biophysical attributes of the rested areas.

Figure 8: Map of Upper Sinxaku village, showing demarcated grazing and rested camps

A Grazing Association meeting at Sinxaku was attended by local farmers, Paul from Conservation South Africa (CSA), the LIMA team (Chris, Spha and Chumani), Eco-rangers, CLOs and Bukho Gusha from Rhodes. CSA is able to assist farmers on farming and sale of livestock once they are members of a grazing association. Farmers were encouraged to join/form associations to have access to benefits such as sheep shearing training, livestock auctions and vaccinations. CSA works with Meat Naturally, which assists with sheep shearing training and marketing for wool.

Figure 9: Members of the Imzizamo Yethu farmers' association attending a livestock auction.

A learning exchange opportunity was provided for members of the Upper Sinxaku grazing association (named Imizamo Yethu) to attend a livestock auction in Matatiele. Community members who have signed grazing agreements and are members of an organized livestock association are able to sell their livestock to beef producers through these auctions. The farmers from Upper Sinxaku were very happy with prices and the transparency of the process and how farmers are able to negotiate their selling prices. The members of the livestock association currently don't have branding certificates, which is one of the requirements to sell in an auction. Having branded livestock certifies that the livestock being sold belongs to the seller and allows traceability, in cases of stock theft.

Figure 10: Cattle auction at Matatiele

The lack of wool marketing in the Tsitsa catchment, show that there is much untapped potential for greater contribution of livestock to rural livelihoods. Benefits from livestock are shared by the large proportion of people who own no livestock, e.g. in the form of meals and employment.

Household-based vetiver grass production

The plug-preneur programme gained momentum during the last quarter of 2020. The setup of a few home-based nurseries whose viability was uncertain after the COVID-19 lockdown was finalised. This period also saw an increase in income generation as a result of sales to the local NRM implementers, other catchment-based projects in the province, as well as to local residents aiming to revitalise or initiate new nurseries.

Production, expansion and maintenance: A great percentage of household nurseries were found to be of acceptable vetiver productivity despite the various constraints encountered to date (e.g. fire, trespassing livestock, shortage of water, etc.). Overall, households presented optimal motivation as evident in the maintenance and expansion of the vetiver production. Households seemed to be making strategic decisions pertaining to moving and re-plating vetiver on better soils found either within the homestead garden or in new households, fencing nurseries adequately to keep livestock at bay, as well as purchasing plugs from neighboring growers to increase production. An indicator of success is also based on the household improvement of vegetable production and infrastructure investment. Some households have introduced or improved the quality of their crops as a result from having to invest time in the gardens overseeing the vetiver grass. Additional investments from the vetiver sales into new fencing or water infrastructure have also been reported.

Turnover of nurseries: The dynamic nature of these types of initiatives has applied to the plug-preneur initiative with participants moving on (e.g. moving to new areas, disinterested, passing away, etc.) and others coming on board. The new members have devised means to start up on their own by either taking over the vetiver plugs from other member or/and purchasing from their neighbours.

The Citizen Monitors working with the vetiver growers have been given monthly plans in order to provide some structure and consistency with their responsibilities. The plans are developed from the monthly discussions held by the project team members, namely LIMA's manager, coordinator and assistant, the TP coordinator and the CoP coordinator. New cellphone devices have also been deployed to the monitors to allow them to effectively communicate with the project team and carry out their monitoring tasks. This has enabled the full team to communicate via Zoom and WhatsApp.

With the first financial transactions from the sales to the local implementing agency in March, the Sinxaku SMME has experienced some teething problems. These are:

- The lack of bookkeeping competency as manifested in uncertainty about the disbursement of funds generated from the sales as these need to account for operational expensed incurred by SMME treasurer, as well as banking fees and income taxes to name a few. Additionally the disbursement procedures carry a level of risk with the movement of hard cash. It has been suggested to set up electronic payments going forward. However the

absence of smart phones would make this challenging and the only option may be to do internet banking from the bank premises itself.

- A joining fee is expected to become a member of the SMME. In this way, some setting up and operational costs will be recovered from such fees. This procedure has created a few problems among the members, as some participants have not been able to fulfill this requirement. Tensions have arisen and need to be properly addressed. Rhodes and LIMA will assist with the drafting of a formal constitution with clear terms of references to tackle this issue going forward. The terms of references would also need to address transfer of ownership.
- The SMME is in the process of developing a business plan for the production of vegetable seedlings. They have approached the Local Economic Development office for support in exchange of a nominal fee of R3000. This process is not finalised and is progressing slowly. However, the SMME members have approached the local traditional leader requesting suitable land for the production of vegetable seedlings.

It is estimated that the number of total sales amount for approximately R18 000 – R18 500. It is also estimated that new sales will take place at the start of 2021 with approximately 19 500 available to harvest (R39 000).

The plug-preneurs from the *Sigoga and Hlankomo* node have agreed to start the SMME registration process early in 2021. The two nodes will join forces as their villages are close together. In this way, the registration fees and expenses will be split between the two groups.

Restoration sites and ranger monitoring system

Follow up village-level meetings have been requested by the residents of Sinxaku to revisit village-level participatory plans and make decisions on future restoration work, livestock management and monitoring by Eco-Rangers. A few problems have been reported pertaining livestock trespassing the restorations sites and disturbing the soil, residents removing brush-cuttings off the sites, and removal of the vetiver plugs planted. There is also concern about restoration sites that may be turned into housing sites. Having said this, most sites were still in good condition, including the site on the spring catchment waterway and the work completed last year on the hillslopes (stone barriers/rock packs with aloes – see cover page). GIB is also planning to employ full-time herders to assist with the livestock management. Clear plans and reporting systems need to be facilitated, drafted and endorsed. LIMA will follow up on this and assist with this process.

GIB has expressed commitment to resume the vetiver planting in the new year. They will purchase as much grass as is available and plant in new sites, as well as revisit the old ones and replace the grass that has been removed or damaged. The norms for the implementation of vegetation barriers will be based on previous work and refined in this new phase.

Training and Capacity Development

Cross-visits and learning exchanges

Plug-preneurs have benefitted from visiting each others' gardens. The cross-visits were arranged by the members themselves in the Hlankomo area. Further learning opportunities as well as learning exchanges across nodes and to other projects outside the Tsitsa catchment should be encouraged.

Avocado Vision Incubator Programme

Avocado Vision is a strategic development partner that supports small businesses addressing society's big challenges. Avocado Vision founded Inhlabathi, an organisation which aims to build, invest in and integrate the Invasive and Alien Plant (IAP) biomass sector into the Green Economy, particularly through artisanal charcoal production businesses. After applying and presenting their SMME business ideas and plans to Avocado Vision and Inhlabathi, two members of the plug-preneur network were selected to participate in a Business Incubator. The incubator is a four-year programme and will enable the members of the network to gain critical business skills. The programme started in November 2020.

Additional bookkeeping training has been offered by the micro-enterprise development skills development programme sponsored by CocaCola. Over thirty SMME members were invited to participate in a short course comprising approximately eight intensive hours on bookkeeping. The training will be arranged for early 2021.

"Our continued engagement with the residents in the catchment (particularly the monitors) and the growing possibilities of green entrepreneurs being developed in the catchment and the way the monitors are engaging with Nosi, Chris and Sipha, makes me feel that maybe we are starting to get feedback from the residents that can help to inform our decision making process and actions and ideas that we take forward with the residents. There is certainly still an incredibly long way to go, but it seems to me that we are developing a good working relationship and understanding which I think is critical to the success and growth of the residents and their ability to move towards making their own, informed decisions about their landscape and livelihoods."

– Tsitsa Project Coordinator

CHALLENGES IN IMPLEMENTING THE TSITSA PROJECT

The general challenges and constraints mentioned in the previous report with regard to COVID-19 still apply although the sequential lifting of lockdown has enabled some fieldwork to recommence. Everyone involved in the TP - researchers, residents, traditional leaders, municipalities and all other stakeholders - has had to adapt to new ways of working and communicating, and to adapt their planned activities. A sharp rise in staff and student infections since November has increased the need for careful social distancing and hygiene practices when on campus. Infections in the rural areas of the catchment have also been high and this has restricted project activities and meetings.

Among the various challenges mentioned in the previous sections, the rise in stock theft and unreliable internet and cellphone connections are potentially the most serious. The stock theft situation carries with it dangers for CLOs who may be drawn into disputes, and also makes it difficult

for grazing associations and farmers to work together in an atmosphere of trust. Since catchment monitors now rely heavily on their cell phones to attend meetings, collect data and participate in training courses, the unreliable and poor connectivity is a major problem which results in additional time and money being spent on ferrying people to central venues for meetings, which can become onerous with the COVID-related restrictions on the number of passengers per vehicle. The team has had to be extremely flexible and innovative in dealing with these issues.

For the Tsitsa Project in general, the major challenge is the potential funding bottleneck in April 2021 and the uncertainty around the future of the project. Unfortunately, this is something about which we can do little, except to make use of every opportunity to submit proposals for future funding.

YEAR-END REFLECTIONS

The year-end reflection event was held online on 10 Dec 2020. In this event the team from LIMA, theTsitsa Catchment and Rhodes University shared personal reflections on the year using the Padlet App, where they posted pictures with short descriptions. The event was intended to boost the morale of the team and to end a difficult year with some positive energy. Reflections covered a whole range of emotions and experiences, from celebration at the arrival of (several) new family members, to pride, a sense of family within the team, exhaustion, sadness and bereavement. A few of the comments are included below.

"This year was very challenging since March. It was the first time not to have Good Friday. This corona things change lives of many people."

"This year was the worst ever for me but I had a strong support system and managed to pull through. What I learnt was from the TP is that when working with a team that is understanding and supportive everything is possible."

"2020 is the year that taught me how quickly things can change, this a year that is never ashamed of anything that is happening around us, a cruel year that doesn't even care how you feel... Losing my mom this year on birthday month was very painful BUT here I'm still surviving. I thank myself to be bold, strong and move on with my life. Thanks."

"I want to say thanks about the information of this Covid 19 that you always feeds us about it. Now I got a job because of this information I use those powerpoints in my interview, just like that I'm in... Also thanks about teaching us how to behave when you are in a meeting also how to analyse things now I'm so very happy and curious like a journalist I'm not afraid of anything."

"2020 has been an adventurous year, full of discoveries, uncertainties, questions and learning. Sometimes it has pushed me significantly out of my comfort zone and allowed for personal and professional growth. It has made me appreciate the rural space and it brought me closer to my loved ones."

"This is the picture that describes my 2020 – I feel like I started my year on a positive note, but life happened. I'm now tired on the road. I'm emotionally, mentally and physically exhausted, but one thing I have learnt from all these challenges especially in the TP is the amazing support we gave each other this year."

"The picture represents the trials of parenthood which I am sure are common across the Tsitsa (reproduction) Project, but the picture also represents 2020 as a year – it is generally quite messy looking from a distance. BUT despite the difficulties, we have managed to get most of the poo in the potty and not completely ruined the carpet. There have been somethings that haven't worked out and we will have to work on cleaning those up, but nothing some biodegradeable soap won't fix."

CONCLUSION AND RECOMMENDATIONS

In conclusion, this final quarter of 2020 was a busy one coming at the end of a difficult year. However, the Tsitsa Project has still achieved a lot including several knowledge outputs, monitoring tools, two successful online or blended learning courses, and some exciting developments in the catchment around grazing associations and green livelihoods.

The following important areas of learning were identified:

- We are learning a lot about the practicalities of working in the "green-preneur" space (e.g. establishment and running of SMMEs, vetiver nurseries, the need for bookkeeping skills); this has been greatly facilitated by working with partners like Avocado Vision.
- We are learning about online learning and how to facilitate online and blended learning processes.
- We are learning the importance of not only good, but *kind* teamwork. One partner mentioned this previously as a hallmark of the Tsitsa team, and it came through strongly in the end-of-year reflection activity. Support from teammates has been important this year.
- We are learning across multiple levels, from individual household level, to learning exchanges between households, to knowledge sharing events in the catchment and beyond, to the strategic level of the "Wisdom Trust". One of the purposes of these reflection reports is to "connect the dots" regarding learning at these different levels, to help all those involved in the TP to see how it all fits into the bigger picture.

The main recommendation at this point, given the future funding uncertainty, is to continue to seek funding to support the work we believe in, and to advocate for and share project learnings and impact widely, including through the Tsitsa Approach to Enhanced Catchment Restoration document currently under development. The recommendations and issues raised by the Wisdom Trust should be taken forward in future project proposals.

Specific recommendations and issues requiring follow-up are listed in Table 3 below.

Table 3: Recommendation and issues requiring follow-up and/or action, arising from this report

	Issue	Action required	By who?
1	The Google Earth platform developed for the project is a valuable resource and should be further showcased to the team and TP stakeholders.	Decide on what is the best way of showcasing this resource. Revisit the idea of a webinar proposed last quarter. Different approaches may be needed for different stakeholders.	Nick Huchzermeyer, Bennie van der Waal
2	Nosi met the newly appointed Working for Wetlands appointed project coordinator for the Eastern Cape, who said that Eastern Cape wetlands are not well mapped in the national database. Therefore, SANBI shared that they could assist with capacity and training necessary to enable local officials to collect data about their wetlands.	Follow up on this possibility with the Working for Wetlands Project Coordinator and other relevant stakeholders.	Nosi Mtati
3	Database of all research conducted in the Tsitsa catchment compiled.	This should be shared with all the TP partners and especially with Margaret Wolff. Margaret to use with visiting researchers.	Wandile Mvulane, Margaret Wolff
4	Residents from Sinxaku requested a process to revise/update their participatory village-level plans.	Follow up on this request.	Laura Conde-Aller
5	"The Tsitsa Approach document contains key insights around managing scope and methods for doing so, including our "bounding and identity diagram"…"	Check whether this diagram is included in The Tsitsa Approach document.	Margaret Wolff
6	Water quality has declined in the catchment, according to the biophysical monitoring data (SASS v5) collected last quarter.	The significance of and possible reasons for the decline should first be checked with Nick. These results then need to be communicated to residents, municipalities etc., possibly with a short infographic in isiXhosa that can be shared with communities by CLOs and monitors.	Karen Kotschy, Nick Huchzermeyer, Wandile Mvulane, Margaret Wolff, Nosi Mtati, LIMA

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APPENDIX 1: DETAILED TABLE OF PROGRESS AGAINST TP OBJECTIVES

Headline Objective 1: Founding Principles

We aim to keep the original set of principles of interest alive, challenged, updated, and above all, implemented in the practical context of the Tsitsa Project. Sufficient consideration needs to be given to the concomitant use of synergies, interlinkages and balance between the seven elements below. Please note that the sub-objectives of this table are less developed than subsequent ones. Participants feel comfortable that keeping the high-level objectives in mind is often sufficient.

Title of objective	Statement of objective	Sub-objectives	Where we are at	Progress this quarter (Q2 2020)
1.1 Social-ecological principles and resilience thinking	1.1 Uphold the centrality of the social-ecological systems view in an appropriate, practical way in all our work. Understand and, where practical, use key concepts in resilience thinking[2] to strengthen our work and to relate it to vulnerability and risk. Further research and reflect on key topics in practical usage of these.	1.1.1 Promoting systems thinking in practice across the Tsitsa Project participation profile	One basic introductory Systems Thinking course for practitioners and project staff, and one advanced Systems Modelling course for project staff completed (2019). Played the Nexus Game 2019/2020 with stakeholders; introduced systems games to Monitor Capacity Development workshop 2019 and Basotho Grass and Fire workshop 2019. Governance and Systems CoP collaboration around systematizing the governance capabilities pathway. The Integrated Nodal Restoration Plans are underpinned and give effect to the socio-ecological principles and resilience thinking. Prof Kate Rowntree is working with Helen Fox in developing materials for Machubeni and Tsitsa, which will look at grasslands as a socio-ecological system.	Two system dynamics model interfaces uploaded to the TP website allowing interactive exploring of models of Rangelands, Markets and Livelihoods, and Soil Erosion, Infrastructure and Economic Development. Publication from Adela Itzkin's PhD research: Itzkin, A., Scholes, M.C., Clifford-Holmes, J.K., Rowntree, K., van derWaal, B. and Coetzer, K. (2021). A social-ecological systems understanding of drivers of degradation in the Tsitsa River Catchment to inform sustainable land management. Sustainability 2021, 13, 516. MSc Research - Megan McCarthy (A system dynamics approach to the management of Invasive Alien Plant Species in the Tsitsa River catchment area, South Africa) - causal loop diagrams and a preliminary system dynamics model. Actor network mapping by catchment monitors as part of Listening and Speaking training.

[2] Apart from socio-ecological systems and systems thinking, this also touches on Resilience / The constructive role of overlap and redundancy / Transformation and transformability trajectories / The generalised adaptive cycle / Panarchy /Scale-dependence, mismatches & cross-scale connections / Alternative stable states / Thresholds / Complexity (generalised complexity as enunciated in the SA context (especially by the work of Paul Cilliers) / Preparedness and scenario-ing.

			Climate change now better integrated as a cross-cutting SES issue (2020).	Tsitsa Approach document first draft near completion; this embodies a SES approach.
		1.1.2 Scenario-ing skills	Dylan Weyers' PhD data on visioning and scenarios at village level (built capacity was lost with Dylan deregistering). Scenario analysis with the vetiver model to comment on the general sustainability of the endeavour in terms of supply and demand (2019). Publication: "A system dynamics evaluation of the long run impact of the Ntabelanga dam on a communal rangeland system in the Eastern Cape, South Africa".	No progress reported.
		1.1.3 Vulnerability Assessments	No progress.	No progress reported.
		1.1.4 Uphold the centrality of the SES view in project-wide synthesis, monitoring and reporting	Meta-Reflection and quarterly project-wide reflection reports and associated reflection events foreground an SES view and SES outcomes. Monitoring system linked to TP change pathway to provide relevant SES data, to be reviewed annually. Quarterly reflection reports and events allow for more frequent feedbacks and promote feedbacks amongst a wider range of actors.	TP reflection reports continue to uphold the centrality of the SES view.
1.2 Transdisciplinarity	1.2 Recognise and uphold the importance of bridging the science-action gap by integrating diverse knowledges, disciplines, and approaches wherever required in the Tsitsa Project. Support selected high-potential studies in	1.2.1 Undertake a thorough field assessment of local environmental knowledge (LEK)	Limited outputs from Ngwenya's Honours thesis. Urgently required.	No progress reported.
		1.2.2. Undertake a literature review of LEK	Proposal for conducting a study on LEK for the Tsitsa project put forward by Chenai Murata in Dec 2018.	No progress reported.

	transdisciplinary processes, focusing on practical usage.	1.2.3 Highlight connections between research and action and between disciplines in project-wide reporting	Meta-reflection reports and quarterly reflection reports include reflection on this principle. Integrated planning process strongly promotes transdisciplinarity.	Ongoing synthesis across 'disciplines' through TP Quarterly Reflection reports. Promoted by participation of all CoPs in development of the enhanced integrated restoration plans for 3 nodes (working together and looking for cross-linkages).
		1.2.4 Identify, value and validate different forms of knowledge and ways of knowing (e.g. scientific, indigenous and place-based)	Monitor Capacity Development courses are guided by the principle of promoting epistemic justice. Modules 1 and 2 completed (Nov 2019 and Feb 2020). This principle is taken into account in the design of the course "Facilitating Social Learning and Stakeholder Engagement in Natural Resource Management Contexts". Literature review by Athina Copteros covering transdisciplinarity and knowledge integration: "Detailed literature-based plan of how to integrate biophysical methods, data and results in practice".	Module 3 of the Monitor Capacity Development course (Listening and Speaking) and the online course "Facilitating Social Learning and Stakeholder Engagement in Natural Resource Management Contexts" incorporated this principle.
1.3 A collaborative, reflexive, and adaptive orientation.	1.3 Embed a culture of ongoing reflexivity and learning, based on adaptive feedbacks as illustrated in strategic adaptive management and through participatory monitoring and evaluation which employs realist principles[3]. Ensure timeous, effective inter-flow between science and action ("praxis"). Use the PMERL[4] system as a central mechanism to embed and promote this culture, and adapt it as required	Note: PMERL objectives are spelt out in a full report (Botha et al., 2017).	2017 and 2018 Meta-Reflection Reports completed. Several reflection events held: "Reflection and Wellbeing Tea" events established 2018; Year end informal reflection (Dec 2019); Meta-Reflection Workshop (Mar 2020). Quarterly reflection reports and workshops established. First quarterly reflection report and event ("Reflect and Reconnect") in Aug 2020 included a wider	This report is the **third** quarterly reflection report (quarterly reporting started in 2020/21 to allow for more regular reflection and adaptation). More CLO feedback included into data-gathering and synthesis processes. Collaboration and reflexivity promoted by the development of the nodal restoration plans and the Tsitsa Approach document. Collaboration between CoPs on various publications (**see Table 2**).

[3] Sensu Sayer, (2000) "realism simultaneously challenges common conceptions of both natural and social science, particularly as regards causation; critical realism proposes a way of combining a modified naturalism with a recognition of the necessity of interpretive understanding of meaning in social life."
[4] Participatory monitoring, evaluation, reflection and learning (See NLEIP booklet).

	to promote feasibility, motivation and willingness to participate.		group of stakeholders than previous reflection meetings. More feedback from the catchment now included into the TP's data-gathering and synthesis processes (LIMA reflection reports, meeting minutes), adding important reflections that were not being captured before 2020. Annual Research Colloquium established. Four events successfully completed (Oct 2016, Dec 2017, Nov 2018, Oct2019). CoP coordinators' meetings now held monthly to promote better integration and awareness of what other CoPs are doing and planning. Margaret assumed the role of looking out for the wellbeing of the TP team during the COVID-19 lockdown, encouraging people and maintaining a sense of what is happening and a sense of being a team. Projects adapted in responses to COVID-19 disruptions. Closer working relationship and synchronisation between LIMA and TP.	The Catchment Coordinator and LIMA have continued regular meetings with DEFF Operations, GIB and Take Note for improved planning and communication. Efforts to secure alternative funding to allow for continuity (adaptive). Ongoing project responses to COVID-19 disruptions, particularly the efforts to help monitors to be included in online activities. CoP Coordinators' meetings continue to be held on a monthly basis. Annual Research Colloquium held (Oct 2020), with a stronger emphasis on linking research and policy. Livestock auction learning exchange at Matatiele for members of the Sinxaku grazing association. Cross-learning visits organised by vetiver growers to each others' gardens.
1.4 Expansive learning and capacity development.	1.4. Building on our collaborative reflexive mode of operation, embed, support and promote adaptive learning and expansive learning processes[5] as a central capacity-building mechanism in and beyond the Tsitsa Project,	1.4.1 Establish a Steering committee to guide the project implementation	Wisdom Trust is functioning well and has had 3 meetings (Jun 2018, 2019, Jan 2020). "A, B and C Teams" are operational and functioning well. CoP Coordinators Meetings started out quarterly, now monthly since the start of 2020.	Wisdom Trust meeting held on 16 Nov 2020. C-team met twice, in Sep and Dec 2020.

[5] Sensu Engeström & Sannino (2010) expansive learning is that in which "the learners are involved in constructing and implementing a radically new, wider and more complex object and concept … the theory of expansive learning puts the primacy on communities as learners, on transformation and creation of culture, on horizontal movement and hybridization, and on the formation of theoretical concepts."

	emphasising co-operation through iterative co-construction[6].		Margaret meets regularly with LIMA (Chris) and DEFF (Sarah).	
		1.4.2 Establish a technical Integrated Planning Team	Integrated Planning Team is operational and gaining traction. Core group of members from CoPs established and several meetings held. Enhanced Integrated Plan 2-day workshop (May 2020).	Submission of integrated nodal plans for 3 nodes to DEFF (Sep 2020). The Tsitsa Approach (previously called the Tsitsa Project Enhanced Rehabilitation Strategy) team met 6 times between September and November.
		1.4.3 Establish a culture of quarterly reflexive strategy assessments	Quarterly Progress reports are being collected from CoPs. Analysis tools and templates have been developed by the PMERL team. Quarterly reflection workshops initiated. First one held on 26 Aug 2020 ("Reflect and Reconnect").	Quarterly reflection reports by CoPs ongoing. No large reflection event held this quarter but findings of Q2 report were discussed at the C-team meeting.
		1.4.4. Establish a two way hierachy of news, data, information and knowledge flow	KL Support person appointed Apr 2020 (Wandile Paul Mvulane). Tsitsa Project website, email address, and a bulk email list are all functional. The email list and the website are the main platforms for news and information sharing. The Tsitsa Project published and distributed 3 newsletters in 2020.	Knowledge sharing and learning exchange events are being systematically captured and reported on by the PMERL team (see Table 3).
		1.4.5. Establish and formalise a capacity development process for the TP	Capacity Development Coordinator appointed April 2019 (Matthew Weaver). Capacity Development Plan V1 developed. Monitor Capacity Development Course developed and running (2 of the 4 planned modules completed) Training of Trainers Course: "Social Learning Facilitation - Introduction to	This is well underway with Module 3 "Listening and Speaking training (Sep 2020) and Training of Trainers online Social Learning Facilitation course.

[6] Collaborative learning which results in a process of shared knowledge planning and action. (Pahl-Wostl et al., 2007; Ison et al., 2011)

			Environmental Learning" developed and submitted for accreditation. Adapted for distance learning due to COVID-19 contact restrictions. COVID-19 training and training in online working tools provided to monitors by LIMA.	
		1.4.6 Purposefully encourage and record/document processes of transformation and expansive learning within and beyond the TP	Publication: Cockburn, J., Cornelius, A., Copteros, A., Libala, N., Metcalfe, L., van der Waal, B. and Rosenberg, E. (2020). A relational approach to landscape stewardship: new perspectives for multi-actor collaboration. *Land*, 9(7): 224. A publication being developed by Matthew Weaver, Jessica Cockburn, Nosi Mtati and Prof. Tally Palmer documents two stories of transformation in the TP ("Transformative processes in a WEF nexus landscape: a case study of two vignettes from the Tsitsa Project"). KL CoP is keeping track of learning and progress taking place through the Enhanced Integrated Planning process. Publication on the skills needed for a new approach to monitoring and evaluation: Rosenberg, E. and Kotschy, K. (2020). Monitoring and evaluation in a changing world: A southern African perspective on the skills needed for a new approach. *African Evaluation Journal* 8(1), a472.	Jessica Cockburn attended and contributed the Tsitsa Project as a case study for a workshop on collaborative governance hosted by the **Programme on Ecosystem Change and Society (PECS) Collaborative Management and Governance Working Group**. The workshop was focused on cross-case analysis of collaborative governance initiatives.
1.5 Polycentric governance.	1.5 Building on understanding multi-level effects at different scales, and their interconnection and relationship to the relevant actors, construct a dynamic practical understanding of how the	1.5.1 Build multiple complex adaptive system models for Tsitsa	Draft models completed for grazing and fire, sedimentation, vetiver grass production, governance and livelihoods.	Two system dynamics model interfaces uploaded to the TP website allowing interactive exploring of models of Rangelands, Markets and Livelihoods, and Soil Erosion, Infrastructure and Economic Development.

	governance network with its formal and informal components might best serve the goals co-constructed between the participants, and support and promote this in practice.	1.5.2 Ensure that the project keeps track of progress towards polycentric governance	Priority sites for restoration were determined by local residents. CLOs appointed in Sep 2019 to monitor citizen participation, voice, inclusion and decision-making in governance processes. Governance CoP together with LIMA and the Catchment Coordinator report on CLOs' activities. Reflections on CLOs' progress towards becoming "participatory governance agents" were included in the Q1 reflection report. Ant Fry's MSc research helped to build a better understanding of the structure of governance institutions in the catchment and potential "leverage points" for change.	The Grass and Fire CoP together with LIMA met with the Sinxaku community to finalize the grazing agreements, sign the association constitution, and demarcate rested areas, thereby building more effective local institutions around grazing management. The "Listening and Speaking" training was designed to equip Monitors (CLOs, CTs, CMs, and ERs) to be able to meaningfully participate in planning and decision-making processes pertaining land use, restoration and livelihood activities. Monthly meetings with CLOs are helping the project to keep track of polycentric governance issues and progress in the catchment. Monitoring of progress towards polycentric governance has also been built into the TP annual survey. Ant Fry's upgrade to PhD will see him conduct an in-depth case study of governance in the Tsitsa River catchment. Paper in progress: "Engaging society and building participatory polycentric governance for adaptive land and water management".
1.6 Towards equitable participation.	1.6 Against a backdrop of low inter-group[7] interaction and widespread power asymmetries, strive to bring relevant groups together to create a partnership in which partners are	1.6.1 Emphasis will be given to obstacles and trade-offs to realising this, especially so-called elite capture[8]	Science-Management Forum successfully operational since 2015.	"Co-listening and speaking" (the second capability) introduced ways of listening and speaking to other actors in the catchment, as

[7] "Groups" meaning groups at many levels and across many dimensions i.e. not only across the racial spectrum but also gender, age, commercial/communal, urban/rural, and across key scale divides e.g. national, district, local, village and household. The opening statement about low interaction and widespread power asymmetries reflects our opinion. Emphasis will be given to obstacle and trade-offs to realising this, including understanding the political ecology/economy which may yield key clues on which to leverage progress.

[8] Because of the typical way in which such projects as ours are built and funded, certain critics of our slow start in engaging communities have suggested that we are running the project without full participation, or taking so long that we might ourselves be guilty of "elite capture".

	closer to becoming equal. The Tsitsa Project will pursue this goal realistically, not to realise benefit sharing in a naïve sense, but to create conditions which are likely to lead to a more favourable situation where power and benefits reflect what is agreed upon by parties as appropriate, in a spirit of co-construction and fairness.		"Learning words" workshops provided a foundation for equitable participation of catchment residents. Significant effort was made to support the catchment-based monitors to participate in online meetings through provision of phones, software, data, training and individual support. Monitors' experiences of the lockdown were highlighted in the "COVID diaries" video, which was screened at the Reflect and Reconnect meeting in Aug 2020. A shift occurred in the way workshops are run in the catchment in 2020: from running in English with small bits of translation to isiXhosa, to running in isiXhosa with bit of English when needed. The Q1 reflection report visual summary was translated into isiXhosa, and all content of the reflection event was also translated.	well as relationship mapping to help monitors know where and how to speak and listen.
		1.6.5 Build capacity among local residents to engage in decision-making processes	Monitor training courses started in 2019. Land and Water Forum not yet established. Network of NRM Committees at the appropriate village-valley level not yet established.	Listening and Speaking training. Training of Trainers online course.
		1.6.2 Include citizens and stakeholders in monitoring and making sense of what is happening	4 Types of citizen monitoring networks established: Citizen Technicians, Citizen Monitors, CLOs and Eco-rangers. Contracts renewed for 2021/22. Established interaction on a learning network between monitors and other TP members (WhatsApp group) operational since Nov 2019. This was used successfully	Eco-rangers started with monitoring of grassland condition in rested areas in Sinxaku. Training of Trainers online course requires participants (including many catchment monitors) to undertake a study of context and stakeholders involved in particular NRM issues relevant in their area.

			for communication and sharing of information related to COVID-19 and associated disruptions. Feedback of project-level results and outcomes to monitors not yet established.	
1.7 Scientific-technical foundation and evidence base.	1.7 Invariably required to complement all the other major principles to produce robust social-ecological outcomes. While Principles 1.1 to 1.6 are the keystones of the Tsitsa Project, we need to recognise a seventh implicit principle: that the project is strongly influenced by a science and evidence basis. This does not mean that the project should be techno-centric, but it does recognise the reality of the technical backdrop continually being called upon and integrated into the other approaches and knowledges. It would be unrealistic not to admit this facet as a keystone, given our history and values, and the level of funding and energy placed into this as the de facto way of working, bearing in mind that it represents only one aspect of the trans-disciplinary approach.	1.7.1 Establish the minimum number of critical baselines (social, ecological and institutional)	Hanli Human Masters thesis completed and presented to TP. Indicator protocols for social and biophysical indicators completed (v1). Adela Itzkin (Phd candicate) provided feedback on her work on the TP "observation system" in May 2020. A large amount of baseline data already collected through research and monitoring. Further baseline data summarised in the Q1 reflection report.	Report on climate change indicators produced. Climate change indicators included in the TP annual survey. CLO network mapping serves to establish a baseline for local-level governance and actor networks.
		1.7.2 Synthesise social-ecological research and evidence being generated across the project to identify key messages for praxis and implementation	Started in the 2019-20 Meta-Reflection Report and ongoing in the quarterly reflection reports. COVID-19 lockdown enabled some researchers to focus more on writing and on synthesizing the evidence base. Biophysical monitoring data collection in Aug 2020.	Ongoing synthesis of knowledge and evidence in this report and future quarterly reflection reports. Two papers published and 5 in progress.
		1.7.3 Establish a functional knowledge management system	Wandile Mvulane appointed (Apr 2020). Website and bulk email list developed and in use for TP communication. TP Google Drive in use by TP team and CoPs. Biophysical monitoring database & updated rainfall and hydrology database (March 2020).	Draft database of research in the Tsitsa catchment compiled.

			Google Earth Platform for the Tsitsa Project, including database, videos and easy-to use guideline manuals (Apr 2020).	

Headline Objective 2. Ecological Infrastructure and Services - the biophysical

We have used the vision statement of the Sediment and Restoration Community of Practice (CoP): To service the Tsitsa Project vision in a socially and economically effective way compatible with the concept of the Tsitsa River catchment as a social-ecological system, with special reference to reducing erosion to more natural levels through restoration efforts and good land-use practices across the landscape. Our interest also includes, wherever possible, ensuring ecosystem services move within the management mandate of other agencies such as Department of Water and Sanitation (DWS) and Department of Agriculture, Forestry and Fisheries (DAFF), Non-Governmental Organisations (NGOs) and communities.

Title of objective	Statement of objective	Sub-objective	Where we are at	Progress this quarter
2.1 Functional ability of landscape.	2.1 Understand and enhance capacity of ecological infrastructure to retain water, sediment and nutrients that support healthy streams/bundles of desirable ecosystem services.	2.1.1 Promote soil maintenance, formation and improvement.	Some linkage with grazing management and restoration works to slow and spread flows, promote water infiltration and prevent erosion. A basic soils workshop was held by J van Tol to train local residents on soil structure and fertility. J van Tol is developing soil rehab norms for SA with one of the study sites being T35 E. Publication: le Roux, J. and van der Waal, B. (2020). Gully erosion susceptibility modelling to support avoided degradation planning. *South African Geographical Journal*: 1–15.	Research proposal completed on “Vegetation and soil recovery over time following clearing of the invasive Australian Acacias in Eastern Cape” (Putuma Balintulo, MSc).
		2.1.2 Water flow regime and routing (reducing surface runoff and increasing	Databases on flows, sediment and water quality/river health are in place and ready	Research underway on the implications of uncertainty associated with suspended sediment monitoring and yield estimation for

		groundwater recharge, springs, base flow).	for more in depth analysis. Rainfall and hydrology database updated in Q1. Map of sediment stores and sinks such as wetlands (buffers, barriers, blankets). Some initial assessment on baselines and trends of indicators at monitoring sites (3 reports by the Biophysical Monitoring Group in RU Geography). Google Earth platform for the TP. Degradation avoidance/ restoration/ rehabilitation decision tree.	catchment management decision-making (Laura Bannatyne, PhD).
		2.1.3 Workshop, share knowledge and plan with land users to reduce climate and disaster risk (fire, floods, and drought).	Report on the impact of climate change and natural disasters on livelihoods, well-being and ES in the Tsitsa catchment is complete (Kate Rowntree). The first workshop took place with local and district Municipal workers, CLO's and provincial Government officials in 2019 (aimed at Elundini Local Municipality). Local Government Climate Change Response Workshop (Jan 2020). Climate change learning resources are being developed for the monitors.	No progress reported.
2.2 Resilience.	2.2 Understand and influence the system's ability to remain in (or to recover to, if transformed) a productive state, even after shocks and surprises.	2.2.1 Avoid degradation of currently functioning EI. See point 2.3a for more information.	Maps of areas that are sensitive to erosion are available and have been used to plan activities with communities and engineers in 2019 (T35A and E). Assessment of land degradation in T35A-E against the SDG 15 indicators.	No progress reported.
		2.2.2 Maintain built infrastructure, such as storm water drains, including discharge areas and wetland rehabilitation structures.	No actions on road culverts. Some maintenance of wetland structures on commercial land by JGDM - Rob	No progress reported.

			Scholtz doing maintenance work (T35 C and Ugie area).	
2.3a Prioritisation and design of practices.	2.3a. Integrate biophysical and social knowledge to identify priority areas for specific (e.g. replanting bare-soil areas) and more general (grazing management) interventions.	2.3a.1 Identify key areas/EI that are functional, but vulnerable to degradation. This will be done from a technocentric (e.g. GIS, remote sensing, modelling, etc.) and local knowledge (workshops, stakeholder mapping, interviews, etc.) perspective. Workshop with land users those key areas/EI that are functional, but vulnerable to degradation (e.g. wetlands that form crucial grazing in winter). Integrate wishes and local knowledge of functioning of the identified/ prioritised areas with techno-centric data.	Workshops to map water and fuel sources, issues with storm water, gully expansion, spring issues, grazing lands, cultivation areas etc. have been held. These workshops included 'learning words' and possible solutions to the issues (2 villages in T35 Aand 1 village in T35E). Headman level mapping in 2017 and village level mapping in 2019. Mapping of headman boundaries in Q1. Ground Truth surveyed a range of features in the catchment which can be used as a generic design for various restoration options (mostly soft options using natural materials) (Jan 2020).	3x Enhanced Nodal Restoration Plans produced for Lower Sinxaku, Upper Sinxaku and Sigoga and submitted to DEFF. Tsitsa Approach document in preparation.
		2.3a.2 Workshop drivers of degradation and possible/preferred solutions. Identify key interventions and how/where/who the solutions will be implemented and maintained.	SedRest CoP facilitated a 3 day workshop on EI issues, possible solutions, examples and design of interventions, what works in the field, integrating the social and biophysical data so work responds to community needs, mapping tools (T35 A and E).	A system dynamics model of the linked SES drivers of land degradation and responses being considered in the Tsitsa catchment was produced by Adela Itzkin for her PhD, based on document analysis and interviews.
2.3b Impact of practices.	2.3b. Understand and influence different land and water use management practices that impact the resilience of ecological infrastructure.	2.3b.1 Understand/research current rangeland and fire management. Engage land users where these practices are drivers of the present-day degradation. Examples of present-day practices could be frequent burning around plantations and continuous grazing.	Longer term GIS analysis of NDVI and primary productivity was done for a range of sites by Biotrack (T35 A, D and E). Biophysical monitoring sites established in grasslands (T35 A, D and E). TP roadshow showcased different soil-vegetation -runoff interactions (T35 A, E).	Integrated nodal restoration plans used by DEFF to guide implementation of restoration work. MSc Research - Megan McCarthy (A system dynamics approach to the management of Invasive Alien Plant Species in the Tsitsa River catchment area, South Africa) - causal loop diagrams and a preliminary system dynamics model.

			LIMA and Grass and Fire CoP are working on establishing grazing associations and conservation agreements among communities. Sean Herd-Hoare (MSc completed): Seasonal trends of rainfall intensity, ground cover and sediment dynamics in the Little Pot River and Gqukunqa River catchments, South Africa. Gareth Snyman (MSc completed): An investigation into the fire regimes of the upper Tsitsa River catchment. LIMA did rangeland mapping in Upper Sinxaku in Q2 2020. Eco-rangers involved in establishment of firebreaks.	Grazing agreement finalised for Sinxaku, constitution signed and rested areas demarcated (2/4 camps to be rested, about 100 ha out of about 480 ha, to be rested from 1 Dec -1 June). Monitoring of grassland condition in rested grazing camps by Eco-Rangers.
		2.3b.2 Engage with planning documents, such as the Local Municipality's Spatial Development Framework, new and existing forestry areas, new and existing agriculture parks, etc. to influence project locality, storm water management, landscape buffers, etc.	Some input into national databases and SDFs such as wetland and soil erodibility spatial data. Existing data on new developments, such as access roads for dam construction, has been used in planning and our data shared. Communication with DWS and Forestry has not always been successful. Mike Coleman involved in Spatial Planning tribunal for Elundini LM? The project has engaged with IDP processes to a limited extent.	Nosi Mtati attended the Elundini Local Municipality IDP budget representation forum. Mike Coleman offered possible links into Elundini Municipality at the Wisdom Trust meeting.
2.4 Monitoring.	2.4 Biophysical monitoring relevant to this theme will be undertaken at multiple appropriate scales with considerable emphasis on local-scale participative monitoring. Results of all monitoring will be	2.4.1 Establish biophysical baselines, such as hydrology, sediment yield, vegetation cover, status of alien vegetation, local soil erosion, river fauna, vegetation diversity, etc.	Baseline data presented in Huchzermeyer et al. (2019) and Huchzermeyer et al. (2020), which also includes protocols for monitoring the biophysical indicators (in collaboration with PMERL team).	Interactive maps available on the website.

	reflected upon in an adaptive PMERL driven framework.	2.4.2 Track changes in biophysical indicators at appropriate timescales, e.g. event, season, year.	Consideration of temporal and spatial scales included in Huchzermeyer et al. (2019) and Schlegel et al. (2019). Adela Itzkin's PhD thesis is addressing issues of measurement scales. Resumption of biophysical monitoring by RU Geography team and catchment-based monitors in Aug 2020. All rain gauges and level loggers were serviced and data downloaded, and water quality and SASS assessments were conducted at the established river monitoring sites in Catchment T35 A-E. Resumption of laboratory analysis of water samples collected by Citizen Technicians. The monitoring, rainfall and flow databases have been updated with the 2020 data.	Updated water quality data included in this report. Monitoring of grassland condition by Eco-Rangers. Nosi's completed MSc thesis ("Towards realising the benefits of citizen participation in environmental monitoring: A case studyin an Eastern Cape Natural Resource Management Programme") makes an important contribution to understanding of the benefits of citizen monitoring, with implications for NRM projects nationally.

Headline Objective 3. Livelihoods and well-being

Revised Livelihoods and Ecosystem Services CoP vision: To achieve the Tsitsa Project goals using the Tsitsa Project principles to improve well-being, especially through bottom-up, community-driven processes which realise local aspirations and integrate fluently into catchment level planning and action through strengthened institutional structures

Title of objective	Statement of objective	Sub-objectives	Where we are at	Progress this quarter
3.1 Livelihood strategies.	3.1 Understand the impact of macro and micro systems on livelihood strategies and well-being, including risks and vulnerability in time and space (for men, women and youth).	3.1.1 Historicity (changes in ecosystem services (ES), well-being and ways of living over time).	Some information in Green Village WRC Report. Review of StatsSA data to track demographic changes - Masters thesis but only T35A-E and only 1990? To 2014. Land cover changes since 1990 analysed by Nicolaus Huchzermeyer (Huchzermeyer et al., 2020).	TP annual survey designed to capture information on ecosystem services, wellbeing and vulnerability over time.
		3.1.2 Current livelihoods, strategies of local households and links to ecological systems.	Some data from Ngwenya. Data from Weyer's PhD still being analysed but limited to 3 villages so extrapolations need to be conservative. Baseline data survey on household agricultural livelihoods proposed by Grass and Fire CoP. Womens' Capability Assessment completed, including a livelihoods survey.	TP annual survey designed to capture information on livelihood strategies of local households and links to ecological systems.
		3.1.3 Resource base or sustainable livelihood assets/capital: human, physical, social, financial and natural.	Some small sample surveys with green-preneurs. Forestry assessment at Tsitsana by LIMA to scope out wattle timber availability and accessibility for charcoal production business. Positive response from the headman to this initiative.	TP annual survey designed to capture some information on human, physical, social, financial and natural capitals.

		3.1.4 Impact of institutional arrangements and processes on local well-being and livelihoods strategies: political and economic (e.g. local/national/global policies, strategies, plans, etc.); informal rules (e.g. cultural norms, traditions, customary laws, etc.); and impacts of non-resident land users and migrants.	Stakeholder analysis completed. CLOs have been appointed and have enhanced communication in the catchment.	TP annual survey designed to capture information on formal and informal institutional arrangements and processes and their impact on local wellbeing and livelihoods strategies.
		3.1.5 Processes, drivers, risk and vulnerability drivers: macro and micro level (e.g. household).	Vulnerability Assessment not yet conducted. Some work done at household level.	No progress reported.
		3.1.6 Impact of climate change and natural disasters on livelihoods, well-being and ES.	Report on the impact of climate change and natural disasters on livelihoods, well-being and ES in the Tsitsa catchment is complete.	Report on climate change adaptation indicators completed.
3.2 Aspirations and opportunities.	3.2 Understand the collective/individual aspirations, pathways and opportunities for a green economy, including entrepreneurship options, as well as constraints and enablers (for men, women and youth).	3.2.1 Past and current livelihoods/ES interventions impact on ecosystems and human well-being.	No progress. Deep synthesis required (possibly postdoc).	No progress reported.
		3.2.2 Aspirations, attitudes and practices towards land, livelihoods and farming.	No progress	No progress reported.
		3.2.3 Resource opportunities for green economy and entrepreneurship expansion and innovation.	Vetiver project as pilot. Further evaluation suggested for 2020/2021.	Ongoing discussions around a charcoal production business opportunity with Avocado Vision and LIMA. Learning exchange for Sinxaku grazing association members to a cattle auction in Matatiele.
		3.2.4 Map out pathways for sustainable livelihoods and green economic trajectories.	Resource economic assessment of the forestry expansion (PhD or postdoc) is a priority.	No progress reported.
		3.2.5 Instrumental and intrinsic value of ecosystem services.	Qualitative intrinsic value to local residents for sediment only, to some degree.	Research underway on citizen understanding and values ascribed to ecological infrastructure (Anele Ntshangase, MSc).

3.3 Participatory planning.	3.3 Develop participatory micro-level catchment plans and strengthen institutional and governance structures to drive livelihoods and green economy benefits (for men, women and youth) linking to higher-level objectives.	3.3.1 Explore appropriate participatory, and thus learning approaches, to the development of micro-catchment level plans.	Kate Rowntree and Laura CA are investigating conservation agriculture and other climate change adaptations.	Residents from Sinxaku requested a process to revise/update their participatory village-level plans.
		3.3.2 Benefits from investing in ecological infrastructure to support local livelihoods, local economy and well-being.	Some quantitative data available from Laura CA.	No progress reported.
		3.3.3 Influence of micro-level plans on higher level strategies and plans and vice versa.	No assessment done.	The Tsitsa Approach document outlines how participatory planning has been and can be done.
3.4 Integration.	3.4 Identify appropriate integrated/holistic land use methods, practices, (learning) approaches and knowledge resources to support livelihoods/green economy expansion and strengthen ecosystem-services (for men, women and youth).	3.4.1 Develop most appropriate and cost-effective intervention in different contexts that would foster local sustainable livelihoods and green economic activity.	Vetiver garden project. Five citizen monitors appointed and overseeing the progress of 36 green-preneurs micro-nurseries with the focus on growing vetiver grass to supply the DEFF NRM implementing agencies undertaking restoration and rehabilitation work in the Tsitsa catchment. The green-prenuers registered their business under the trading name "Mchatha Primary Co-operative Limited". Monitoring of vetiver grass survival during the lockdown period and re-engagement with participating households. The SMME and other members have shown interest and motivation in continuing with the initiative. Plans have been made to provide support to the green-preneurs to improve and expand their supply in view of next year's implementation of the integrated nodal plans.	Vetiver gardens doing well and have had good rains. Green-preneurs sold another 3000 plugs to the GEF5 group and GIB will be continuing buying plugs. 2 Green-preneur SMME members were selected (4 applied) to take part in training at the Green Enterprise Incubator in Matatiele, starting Dec 2020. Tensions arose within the SMME.

		3.4.2 Identify, adapt and develop appropriate learning knowledge and resources relevant to and aimed at different catchment stakeholders and beneficiaries.	Training for the monitors to equip them with broad research and monitoring skills relevant to the TP. Anele Ntshangase (MSc) produced a thorough review of TP outputs related to EI and the relationship between TP communities and EI.	No progress reported.
3.5 Monitoring and Evaluation (of well-being and capability).	3.5 Monitor and evaluate livelihoods, green economy and well-being capability expansion including agency and outcomes.		Social indicators derived collaboratively with communities by Hanli Human (MEd). A Women's Capability Index has been completed. Plan to use CLOs and surveys to collect data. Monitoring of vetiver grass survival during the lockdown period and re-engagement with participating households.	TP annual survey designed to capture information on capability expansion around green livelihoods, including agency and outcomes.

Headline Objective 4. Institutional actors and governance

The vision of the Governance CoP: In support of the Tsitsa Project vision, to understand, prototype and help implement effective polycentric governance; to advise on internal governance appropriate to achieving the Tsitsa Project goals overall. Our influence may reach neighbouring catchments.

Title of objective	Statement of objective	Sub-objectives	Where we are at	Progress this quarter
4.1 Current and desired governance arrangements.	4.1 Map out, understand and influence governance processes, interventions, rules and codes that exist (or should exist) at local, provincial, national and international levels, including informal norms and arrangements.	4.1.1 Map out and understand legal and regulatory environment and acts as deemed necessary, e.g. Spatial Planning and Land Use Management Act (Act No. 16 of 2013) (SPLUMA).	Mike Coleman's Report on integrating the TP into SPLUMA is complete.	No further progress reported.
		4.1.2 Identify key gaps and contradictions and work towards pragmatic solutions (also using Institutional Analysis and Design (Ostrom, 2011).	T35 A-E and T35 F-M stakeholder analysis complete but not sufficiently nuanced enough and lacking the political ecology aspect.	A-team (Strategic Oversight Committee) intended to promote networking with higher echelons of government but has only met twice. There are concerns about the structure of the C team going into 2021 due to the busy schedules of many of its members.
		4.1.3 Meaningfully influence and contribute to developing appropriate overall governance strategy, including the important facet of overlap between water governance and land governance at different scales	Governance Plan developed and updated in Q1. Governance CoP made headway in engaging communities to overcome epistemic injustices that hinder the development of a land and water forum. Integrated Nodal Restoration Plans integrate land and water governance to some extent.	Research in progress on "Leverage Points for Improved Participation in Rural Land and Water Governance" (Ant Fry, MSc).
		4.1.4 Map out players and roles and non-participators who could be likely players	Complete – but needs catchment embedded staff.	CLO network mapping serves to establish a baseline for local-level governance and actor networks and a starting point for local interventions.
4.2 Political ecology/economy.	4.2 Understand the historical and contextual development of the "realpolitik" we observe in	4.2.1 Appoint a Catchment Coordinator	Nosi Mtati was appointed as Catchment Coordinator in 2019.	No further progress required.

	the catchment at different levels, as well as the informal and shadow networks and de facto power influences, as this influences and is influenced by natural resources and their management.	4.2.2. Adapt the PMERL data collecting protocols to collect grass roots information that can be distilled and cross referenced for political ecology analyses	CLOs appointed and are to be used to collect information through surveys and interactions and feed it into the CoP structures and into PMERL. CLO reflections showed that CLOs have made progress towards being participatory governance agents in the catchment.	CLOs are starting to report on the local political ecology in the catchment.
4.3 Internal governance and management of overall expanding scope of the Tsitsa Project.	4.3 Understand, support and, where necessary, improve current internal governance arrangements in the Tsitsa Project such that, overall, the Tsitsa Project goals are more likely to be met. Currently, a particularly important aspect is managing the concentrically expanding scope in multiple dimensions of the Tsitsa Project's reach – this needs to be sensibly constrained.	4.3.1 Improve or create a mature praxis culture in the scientific and management components focusing on core B team.	LIMA joined the CoP coordinators' meetings and this has allowed better communication and feedback between the organisations. Confusion over the Senior Social Facilitator's role has been resolved. Margaret Wolff (TP), Sarah Polonsky (DEFF) and Chris Jackson (LIMA) have been meeting monthly to discuss what is happening in the project. Sarah has introduced the Tsitsa and Thicket projects to the Climate Change group within DEFF (Hlengiwe and Olga). Project staff make use of various opportunities to engage with others in the catchment and explore emerging opportunities.	The Wisdom Trust meeting addressed issues of scope.
		4.3.2 Partnering strategy including our own partnering profile e.g. potentially with uMzimvubu Catchment Partnership Programme (UCPP), various universities, etc.	Attendance of Umzimvubu Catchment Partnership Program (UCPP) quarterly meeting in Matatiele initiated.	Several partnerships were explored or strengthened (see Table 3).
		4.3.3 Develop a philosophy and criteria for managing this reach and scope appropriately.	No progress.	The Tsitsa Approach document contains key insights around managing scope and methods for doing so, includeing our "bounding and identity diagram", use of systemic thinking techniques, comparative risk assessment, and

				the vital attributes step in strategic adaptive management.
4.4 Project-related ethics.	4.4 The Governance CoP will act as a central referral point for ethics issues in the Tsitsa Project. These include academic issues such as intellectual property; community engagement issues; ethics codes for research and engagement; broader philosophical issues, such as evolving values, as these influence the ethical views of various stakeholder groupings (including ourselves).	4.4.1 Develop a policy guideline for visiting student and researchers	Students from The Netherlands were reigned in by Tally in 2019. Tsitsa Project Research Protocol for collaborative research developed.	Protocols for visiting researchers discussed at C-team meeting in Sep 2020. C-team to approve all proposals in consultation with the Catchment Coordinator and LIMA. Document in preparation for internal use on how we work together in an ethical and respectful way regarding publications, and the use of PMERL reflections as research data.
		4.4.2. Develop a generic research collaboration MOU	Tsitsa Project Research Protocol for collaborative research developed. Joint general ethics application submitted by KL and Governance CoPs and approved by RU.	No further progress reported.

Headline Objective 5. Realising agency and collective action

Recognising the centrality of meaningful stakeholder involvement in the Tsitsa Project, to work towards facilitating trust and capacity, and a sense of a shared future aimed at a desired state[9] that has been jointly crafted. To reach this we focus on facilitating motivation (including a sense of fun) and ability which helps provide agency at the individual and collective levels, and ultimately, strong and sensible interacting contributions from government, traditional, and civil society.

Title of objective	Statement of objective	Sub-objectives	Where we are at	Progress this quarter
5.1 Principles.	5.1 It may be necessary to understand and develop praxis for the following key attributes of this approach in our context/s	5.1.1 Role of champions.	?	No progress reported.
		5.1.2 Capacity development.	Matthew Weaver appointed as Capacity Development Coordinator in 2019. Capacity Development Plan v1 co-developed (Oct 2019). Community Engagement Plan updated Q1.	Developing agency and collective action is a key intention of the Listening and Speaking and the Training of Trainers courses.
		5.1.3 Motivation for this: how to deepen interest.	Governance CoP Capabilities Pathway and supporting writings.	No progress reported.
		5.1.4 What is agency?	Completed: Hanli Human's Masters thesis including agency into the social indicators.	See under Objective 1 – Towards equitable participation. Research underway on capacity development for agency (Matheboho Ralekhetla, PhD).
		5.1.5 What is collective action?	No progress.	No progress reported.
		5.1.6 How would we best select entry points and best use our time and energy?	No progress.	Research in progress on leverage points for improved participation in rural land and water governance (Ant Fry, PhD).

[9] This desired state requires joint updating as contexts shift and learning occurs; an adaptive principle.

		5.1.7 Equity Warning Light.	Laura CA has done a Gender study and developed a survey. Womens' Capability Index completed. PMERL indicators include measures of equity. No progress with commissioning a set of case studies.	The TP annual survey will collect information on equity.
5.2 Prototype (pilot) projects that exemplify this goal.	5.2 To engage in a selected set of projects[10] which involve societal elements (with at least some important/novel linkage and near-equal participation from two or more CoPs) as well as at least some significant transdisciplinary dimensions.	5.2.1 Green-preneurs producing vetiver slips, grass plugs and tree seedlings for rehabilitation work. These can be done at the household level in the vicinity of rehabilitation areas and be sold to the implementers.	Some 36 green-preneur micro-nurseries are growing vetiver grass to supply the DEFF NRM implementing agencies and a SMME has been registered. Monitoring of vetiver grass survival during the lockdown period and re-engagement with participating households.	Vetiver gardens doing well and have had good rains. Green-preneurs sold another 3000 plugs to the GEF5 group and GIB will be continuing buying plugs. 2 Green-preneur SMME members were selected (4 applied) to take part in training at the Green Enterprise Incubator in Matatiele, starting Dec 2020. Tensions arose within the SMME.
		5.2.2 Test the feasibility of grass plugs using indigenous grass spp (Masters project).	?	No progress reported.
		5.2.3 Household and village-scale planning and implementation of rainwater and storm water harvesting and conservation farming (across communal and commercial farming).	Some progress made in Livelihoods CoP with rainwater harvesting for vetiver growing households.	No progress reported.
		5.2.4 Expansive systematic learning across multi-level government actors especially DWS, DEA, DRDAR, ECSECC.	Some learning takes place through the A and B teams.	No progress reported.
		5.2.5 Project awareness and advocacy.	Brochure - complete.	No progress reported.

[10] These projects should be challenging and novel but feasible (i.e. neither trivial nor overwhelming, nor too many of them overall for our capacity)

			Draft Communication and Advocacy Plan developed (May 2019), updated Mar 2020. Project was showcased at a WRC webinar on green businesses for empowerment of rural women. As a result of the webinar, a Johannesburg-based freelance producer and video journalist for DW German Television, the foreign service of the German public broadcaster, expressed interest in producing a short 5-8 minute documentary on the project (to showcase best practice initiatives for the protection of climate and biodiversity).	
		5.2.6 Catchment-wide awareness: Radio, brochures, school competitions.	School logo competition complete, logo being used by project. Climate change learning resources are being developed to build climate change literacy. Three TP newsletters produced in 2020. All Tsitsa Project news and events are posted on the website and/or communicated via email. To reach stakeholders in the catchment they are shared via the Catchment Coordinator and LIMA.	Meeting with Ivanya Yethu who work with youth and are interested in working in the Tsitsa River catchment. We are hopeful that they will be able to form part of the larger Tsitsa Project family in future as this will add a much needed boost to the interaction with the youth in the catchment, particularly school learners.
		5.2.7 CLO capacity development and tools, including monitoring.	Two modules of monitor short course completed (Nov 2019 and Feb 2020).	Module 3 (Listening and Speaking training) completed. ToT course is helping CLOs to develop social learning / stakeholder engagement processes to address particular NRM issues in their contexts.

Headline Objective 6. Knowledge flow, communication and advocacy

Provide effective information and communication for the Tsitsa Project, both for internal (how the Tsitsa Project runs itself) and external purposes. Build an enabled constituency of support, interest and action for the catchment and even more widely for the Tsitsa Project principles in multiple areas (scientific, technical, funding, political, and administrative, across various sectors and broadly across resident and other stakeholder communities). Lobby when necessary with appropriate "marketing" or advocacy initiatives.

Title of objective	Statement of objective	Sub-objectives	Where we are at	Progress this quarter
6.1 Scientific-technical databases, libraries and decision support systems.	6.1 Make information and data within the Tsitsa Project accessible, available, understandable, transparent and usable to all stakeholders at different governance levels to best aid further research, management and implementation.	6.1.1 Archive and display scientific-technical datasets in a user-friendly way. These can include theses, papers, GIS layers, reports, policy briefs, etc. Include metadata on methodology, tools used, data sources, etc.	Wandile Mvulane appointed (Apr 2020) to help with knowledge management. Website hosted with RU is fully operational and updated regularly. Google sites content has been migrated across. TP Google Drive set up and in use by CoPs. Google Earth Platform for the Tsitsa Project, including database, videos and easy-to use guideline manuals (Apr 2020). Data products, booklet and decision tree produced by the SedRest CoP are all helpful for knowledge flow, communication and advocacy. TP raw datasets still need further organisation. Dylan Weyers' Google Drive still a good starting point. INR Knowledge portal still operational. A system was also set up by Kyra Lunderstedt.	Two system dynamics model interfaces uploaded to the TP website allowing interactive exploring of models of Rangelands, Markets and Livelihoods, and Soil Erosion, Infrastructure and Economic Development. Interactive maps on stakeholder analysis, woody vegetation, wetlands, status of cultivated land and prioritised alien vegetation available on the website. Links to reports and publications available on the website. Draft database compiled of research in the Tsitsa catchment.
		6.1.2 Archive and display community and stakeholder related datasets in a user-friendly way. These can include theses, workshop notes, community maps, GIS layers, reports, etc. Include metadata	Google Earth Platform for the Tsitsa Project, including database, videos and easy-to use guideline manuals (Apr 2020). Incorporates local plans and green-preneurs data linkages also. Need to sharpen up mWater data this year and include restoration sites.	No further progress reported.

		on methodology, tools used, data sources, etc.		
		6.1.3 Allow interactive spatial data display on an online GIS platform that will support decision making by stakeholders.	Google Earth Platform for the Tsitsa Project, including database, videos and easy-to use guideline manuals (Apr 2020).	No further progress reported.
6.2 Community strategies.	6.2 What are the goals of this strategy? What do we want to achieve?	6.2.1 Formulation: internal/external, so called target audience.	?	No progress reported.
		6.2.2 Develop and biennually revise a Tsitsa Communications Strategy. Especially outside the catchment, e.g. internationally (is this advocacy done by DEA/DST etc.? What do we expect if this works? How do we then support them? What limits them? To what extent can Tsitsa staff be expected to expand their scope, and what are the dangers of exaggerating advocacy?)	Draft communication and advocacy plan developed (May 2019) and updated (Mar 2020). Updated Branding and Communication Strategy.	No further progress reported.
		6.2.3 How do we measure awareness in the catchment? Establish a baseline of understanding in the catchment regarding natural resource management and EGS.	CLO network to establish baselines for understanding.	The TP annual survey will collect information on awareness and reach of the TP.

6.3 Lobbying/Advocacy.		6.3.1 Develop key Tsitsa Project Principles	Cockburn (2018) paper summarises the core principles. Quarterly reflection reports include a reflection of progress against these principles.	"Power hour" to share project progress with Christo Marais from DEFF (Oct 2020). Margaret Wolff continues to play an important communication and advocacy role, through the relationships she has built and is building with other organisations and people. The TP team attended a broad range of events with external partner organisations (see Table 3) - this builds networks and helps to identify opportunities. Presentations at the 2020 Annual Biodiversity Research and Evidence Indaba: the challenges of working in a complex space regarding planning and funders – although we talk about cooperation and integration the system in which we work is not conducive to it. It was noted at the Wisdom Trust meeting that sharing useful aspects of the TP approach can take place strongly through the 'community of practice' emerging through the widely attended online Training of Trainers course, and that we should consider strengthening such wider networks as a primary route for out scaling and upscaling. Funding proposals submitted to DEFF and several other funders.